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Volume 93 **New York, November 1, 1935** **Number 2**

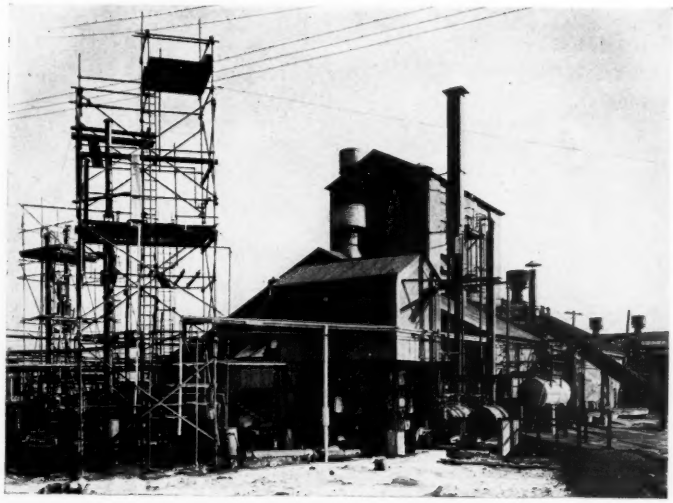
A Gigantic Test Tube

The Synthetic Rubber Industry Grows within the Rubber Industry

V. A. Cosler[1]

ON OCTOBER 14 the Rubber Chemicals Division of E. I. du Pont de Nemours & Co., Inc., announced that its synthetic rubber DuPrene was being produced in a new plant which had been under construction for the past year. The new plant is producing at the rate of one million pounds per year.

This represents the end of "Test Tube" production of DuPrene. Perhaps this statement will be a surprise to those in the rubber industry who know that over a three-year period more than 400,000 pounds of DuPrene plastic polymer have been sold to rubber manufacturers. The fact that this quantity of DuPrene has already been made only emphasizes the size of the "Test Tube" and does not contradict the statement. Until August, 1935, DuPrene was made in the same plant which produced the first twenty-five pound batch.



The Giant "Test Tube" in Which Practical DuPrene Manufacturing Processes and Equipment Were Developed

Dealing with Hazardous Gases

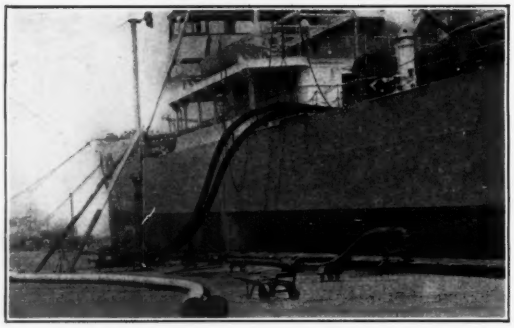
In chemical manufacture the usual procedure is to outline a method of manufacture from laboratory experiments. This proposed method is then perfected in small-scale or "semi-works" equipment capable of producing very limited quantities of material. When the matter of equipment necessary for the production of experimental quantities of DuPrene was considered, it was apparent that a large installation would be required since the contemplated reactions involved the handling of gases, with their relatively large volume per unit of weight.

However after a critical survey du Pont engineers concluded that the erection of an even larger plant, capable of producing more than experimental quantities, was advisable. The factors which forced this conclusion can best be understood by a brief discussion of the reactions entering into the synthesis of DuPrene. The bare outlines of these reactions are:

1. $CaC_2 + H_2O \longrightarrow C_2H_2$ (Acetylene)
2. $2C_2H_2 \xrightarrow{\text{Catalyst}} HC{\equiv}C-CH=CH_2$ (Monovinylacetylene)
3. $HC{\equiv}C-CH=CH_2 + HCl \xrightarrow{\text{Catalyst}} H_2C=CCl-CH=CH_2$ (Chloroperne)
4. Chloroprene polymerizes to form the plastic polymer.

[1] Rubber Chemicals Division, E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.

It was at once recognized that the handling of such explosive gases as acetylene and its polymers constituted a hazard which could best be evaluated and minimized by observation under conditions approximating large-scale production.



Hewitt Rubber Corp.

DuPrene Suitably Lines Ship Loading Oil Hose

Unusual Equipment Required

Reaction 2 presented problems in regard to the practicability of equipment capable of volume production. If the monovinylacetylene (a gas at normal temperatures) is not promptly removed from contact with the catalyst a further reaction takes place to form divinylacetylene ($H_2C=CH-C\equiv C-CH=CH_2$). To prevent the formation of large proportions of this product the method proposed was to remove the desired product, monovinylacetylene, as soon as formed by carrying it along in a stream of acetylene. This necessitated the subsequent separation of acetylene and monovinylacetylene, as well as the removal of small quantities of water and other by-products, which was to be accomplished by condensation and fractional distillation. This required cooling the gas stream to approximately 100° below zero Fahrenheit, and necessitated the designing of a refrigerating system for which there was no precedent. It was thought that conclusive data on such equipment could only be obtained by operating a large unit.

Moreover laboratory work indicated that the catalyst solution in Reaction 2 would sooner or later become ineffective owing to tar formation. To establish the effect of this formation on plant operation it was considered necessary to observe the catalyst when operating under conditions of quantity production.

Reaction 3 is quite similar to the previous reaction in many respects. Chloroprene, if not removed from the reaction area promptly, reacts with a second mol of HCl to form an appreciable amount of dichlorobutene. ($H_2C-CCl=CH-CH_2Cl$). Here again the same general procedure was proposed. The chloroprene was to be removed from contact with the catalyst in a stream of monovinylacetylene, and again separations were to be accomplished at low temperatures, and again complex equipment was required.

There were also indications that some premature polymerization of chloroprene could be expected in fractionating. It was considered advisable to study the amount of such polymerization in large-sized equipment.

A Plant Layout as Well as a Product Development

All these considerations pointed to the advisability of erecting and operating a large pilot plant. At a time when the industrial world was growing dizzy from "turning corners" and suffering the "depression blues," it required considerable courage and confidence in ultimate results to decide that such a large-scale "Test Tube" should be constructed. But the decision was made, and the pilot plant erected. The new plant just completed and the rapidly widening market for DuPrene confirm the wisdom of the decision reached at that time.

The pilot plant has been modified and rearranged many times in the past three years. It outgrew its original shell, and many pieces of equipment which proved to be necessary during the course of development have been erected outside its walls. The plant, as it stands today, bears little relation to the original plans, but the new plant with its efficient equipment and effective layout is the result of lessons learned by operating the pilot plant. The "'Test Tube" has justified its existence.

Subsequent events showed that the necessity of producing large quantities of material was an advantage rather than a handicap. To test the potential market for this new synthetic rubber larger quantities were required than had been anticipated, and markets developed so rapidly that the plant was soon taxed beyond capacity, but still more was required to test out new fields which soon opened up for this remarkable material.

Valuable Properties Fill Important Needs

The characteristic of DuPrene which had first aroused the interest of du Pont chemists was that, while closely resembling natural rubber in resilience, strength, and toughness, it displayed a surprising resistance to the deteriorating effect of oils, solvents, and chemicals—but as development work progressed, it became evident that other characteristics were of equal importance. It was found that properly compounded DuPrene had remarkable heat resistance, that it was more resistant to the deteriorating effect of ozone and oxygen and direct sunlight than were compounds of natural rubber. It was also discovered that gases permeated DuPrene compositions much less rapidly than compounds of natural rubber, and that the aging characteristics were much superior, also that cements of DuPrene impregnated porous bodies more quickly and thoroughly. Another interesting discovery was that a vulcanized synthetic rubber latex resembling natural latex could be made from chloroprene and that the film deposited had the same desirable properties as vulcanized DuPrene. All these discoveries opened up new possibilities for DuPrene and increased the demand. Before the new plant could be completed the ""Test Tube" was unable to satisfy the established demand for DuPrene.

It is interesting to note some of the markets which have been partially or wholly developed by DuPrene manufactured in the pilot plant. Printing roll manufacturers found that DuPrene compounds were much superior to rubber and that new fields were open to them in lithography and color printing. The printing blanket manufacturer found that a better offset blanket could be made from DuPrene.

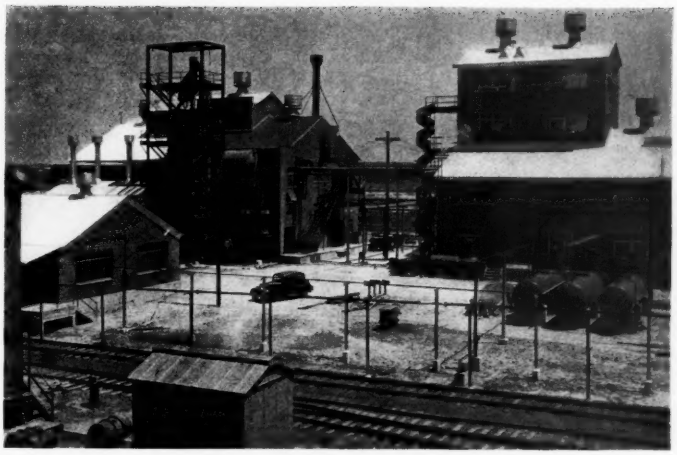
Manufacturers of molded goods developed new markets for DuPrene products. As a result, DuPrene compounds are now used in sealing rings, gaskets, grommets, valve disks, bibb washers, brake cups, bottle seals, swab rubbers, and for many specialty products where the service conditions demand resistance to oil, solvents, chemicals, or elevated temperatures.

Wire manufacturers found a ready use for DuPrene as the jacket for automobile ignition wire, replacing braid and lacquer, because it resists the heat, oil, and "corona effect" encountered in this service. Portable cable with DuPrene jacket is being produced for use where grease, oil, and chemicals are encountered, and other types of insulated wire and cable have been improved by the substitution of DuPrene for rubber.

Hose manufacturers are using DuPrene as a tube in ship loading oil hose, in tank truck hose, in gasoline

service station hose, in grease hose, in hose for conveying propane and butane gases, in paint spray hose, in chlorine hose, and in many other special types of hose for conveying liquids and gases that are harmful to rubber.

Belting manufacturers are using DuPrene for flat transmission belts, V-belts, and for protective coatings for special conveyer and elevator belting. Packing manufacturers have been able to improve their products by the use of DuPrene plastic polymer, latex, and cement.



The New Million-Pound-per-Year DuPrene Plant

DuPrene cements can be applied to fabric by spreading. The proofer has utilized DuPrene compositions in the manufacture of diaphragm fabrics, aprons, caulking material, and many special types of coated fabrics. Gloves of DuPrene are being made for the chemical and allied industries.

DuPrene latex is used to impregnate and coat such materials as cork, leather, fabrics, yarns, asbestos, etc., and is finding a rapidly widening market in those industries where such materials are important.

Engages Interest of Rubber Compounders

In spite of this formidable list of accomplishments it can be truly said that the work of applying this synthetic rubber to the needs of industry has really just begun. Like natural rubber, DuPrene must be compounded with other materials to create products having the many different properties required by the varied demands of industry. Rubber technicians are busily engaged in investigating the effects produced by combining DuPrene with hundreds of different compounding ingredients. A study of the physical characteristics of one composition suggests to the experienced rubber chemist other combinations having different properties. A special compounding technique is gradually evolving from these investigations, and experimentation is taking on an accelerated pace as new demands of industry are created by solving old problems. Production methods, too, must be modified at times to produce new products, and a special manufacturing technique for DuPrene compounds is gradually developing in rubber manufacturing plants.

So within the rubber industry we see growing another, the "synthetic rubber industry." As DuPrene moves out of its "Test Tube," the rubber industry is prepared to exploit its commercial possibilities.

Para-Graphs

STABLE GAS GENERATING COMPOSITIONS. A stable mixture of ingredients from which to prepare pellets for use in inflating hollow balls, etc., follows.

	%
Ammonium chloride	40.0
Sodium nitrite	59.0
Anhydrous sodium carbonate	1.0

The main constituents, viz., the ammonium chloride and the sodium nitrite, were commercial materials not completely dried. When maintained at 60° C., this gas producing mixture decomposed roughly twenty-five to thirty times more slowly than pellets prepared from dried materials but without sodium carbonate, and over one hundred times more slowly than pellets prepared from undried commercial materials, again without sodium carbonate. They undergo no appreciable decomposition at ordinary temperatures, or is their value diminished for inflating rubber balls at 100° C. (212° F.) or over.

DISPERSION OF CHLORINATED RUBBER. In connection with the employment of chlorinated rubber it is often more advantageous to use aqueous emulsions instead of solutions of chlorinated rubber. Such emulsions are obtained by the following methods. The process of dispersion proceeds at an exceedingly rapid rate and does not require any special emulsifying agent. Two examples are given.

Fifty parts of toluene, fifty parts of water, and twenty parts of pulverulent chlorinated rubber are introduced jointly into a stirring apparatus and stirred. A uniform and stable dispersion is formed in a few minutes.

Fifty parts of toluene and fifty of water are brought together and intimately stirred; twenty parts of finely divided solid chlorinated rubber are added during the stirring. A uniform and stable dispersion is formed immediately.

MOLD AND PRESS PLATE TREATMENT. As an example, the following mixture is given as a mold lubricant of special merit.

	Grams
Sodium hyposulphite	280
Sugar	70
Magnesium sulphate crystals	30
Glycerine	15
Hexamethylene tetramine	1.5
Phenol	2.0
Sodium salt of the sulphuric acid derivative of the reaction product of normal butyl alcohol and a mixture of approximately 85% ortho hydroxy diphenyl and substantially 15% para hydroxy diphenyl	5.0

The composition thus prepared is added to substantially twenty to thirty times its weight of water. When applied on the surface of molds and press plates, which contact with rubber or other material to be vulcanized or molded, the film produced is markedly tough and resists rubbing off when the rubber or other material is pressed into the mold. Furthermore it is very su-

(*Continued on page* 36)

Impact Tester for Molded Insulating Materials[1]

I. L. Hopkins[2]

ALL of the 17,000,000 telephones in daily use in the Bell System are made in part of molded insulating materials. The importance of such materials to the telephone is evident when but one of their many uses is considered—namely, the casing of the handset and the mouthpiece and receiver of the desk-type telephone. Some breakage of such parts is inevitable, but losses have been greatly reduced by the use of compounds offering high resistance to fracture. The toughness of these products is therefore a very important characteristic, and in studying them it has been found necessary to devise apparatus not only to determine the resistance to impact of the finished parts but also that of the material itself.

Investigations carried out years ago by others to develop methods of testing impact strength of materials have shown that the work required to break a test specimen is a reliable quantitative measure of the resistance to service fracture and that the use of a swinging pendulum to cause the fracture is a simple and effective means of making the measurement. In practice the specimen is held in the path of the pendulum at its lowest point and broken by a single blow when the pendulum falls from a known height as it is released from a catch which holds it in an elevated position. The energy used to break the specimen is computed by measuring the difference between the height from which the pendulum starts and the height to which it swings after the break, with suitable correction for windage and friction losses.

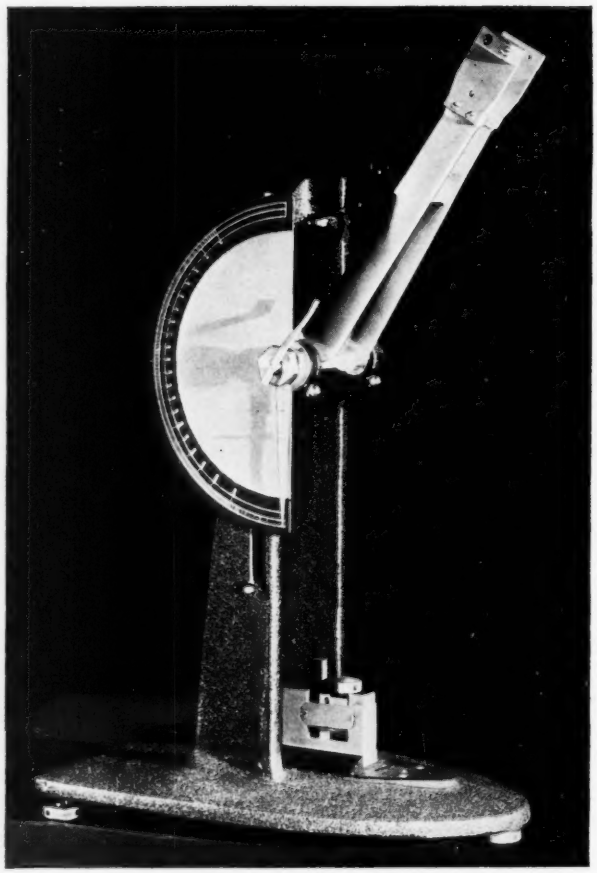
Machines constructed on this principle have been used for many years in testing metals, and their adaptation to the study of molded insulating materials therefore suggested itself when an investigation of the impact strength of such products was undertaken some years ago by the Laboratories. As this method of test is to a certain extent arbitrary, the problem of applying it to insulating materials was merely one of determining a specimen suitable for these materials and developing a machine of the sensitivity required. The essential problem which had to be solved for the new machine was to make a pendulum of the requisite length sufficiently light and rigid to deliver a blow of hundreds of pounds and yet measure accurately the impact value of specimens requiring only a fraction of a foot pound to break them. The difficulty was met by making the shaft of the pendulum of thin aluminum lattice work reenforced with crossbracing. The capacity of this machine, 2.26 foot pounds, was the smallest obtainable at the time.

The fundamental work of classifying materials according to their impact strength was done with this machine, and requirements were written by the Laboratories for materials in which impact strength is a critical quality. The machine is well suited for the general testing of materials of the types listed below which have strengths lying in the following ranges:

Hard rubber	.12 to .35 ft. lbs.
Wood flour filled phenol plastic	.1 to .15 ft. lbs.
Cotton flock filled phenol plastic	.2 to .3 ft. lbs.
Phenol fibre—edgewise	.2 to .3 ft. lbs.
Phenol fibre—flatwise	1.0 to 1.2 ft. lbs.
Phenol fabric	1.2 to 1.9 ft. lbs.

Experience showed that some changes in construction, particularly to increase the permanence and rigidity of the pendulum and of other parts in order to insure accu-

(*Continued on page* 39)



Constants of Impact Machine

Length of Pendulum	13.000″
Initial Elevation of Pendulum	24.000″
Effective Weight of Pendulum	1.000 lbs.
Capacity of the Machine	2.000 ft. lbs.
Distance—Axis to Center of Percussion	13.010″
Accuracy	about .001 ft. lbs.

[1] Reprinted from *Bell Laboratories Record*, Sept., 1935, pp. 29-31.

[2] Telephone Apparatus Development, Bell Telephone Laboratories, Inc., 463 West St., New York, N. Y.

Government Regulations and Their Relation to Safety[1]

C. S. Ching

IT IS a real pleasure to be asked to address this group representing the industry with which I am connected. My first contact with this group was at the annual meeting in Detroit in 1922, and at that time safety and accident prevention had not yet taken hold of our industry as a management function. Today that management which ignores accident prevention in our industry is looked on as wholly incapable and inefficient. The results achieved by this division of the National Safety Council[2] speak for themselves, and the place of the rubber industry in the rating of all of the industries in the United States is sufficient evidence of the intelligent and energetic way in which this problem has been handled.

I assume that when I was asked to speak on the subject of "Government Regulations and Their Relation to Safety," the Program Committee had in mind the project which was then on foot to have safety practices incorporated into the fair trade practice codes of the various industries. Up to the time that the Supreme Court declared the NIRA unconstitutional, very little progress had been made along this line, and, of course, since the codes have been discontinued, there has been no federal activity. There is a grave question as to whether a safety practice code covering all industry would be any more effective when promulgated by the Federal Government than were the codes regulating hours, wages, and other trade practices. The variation in the size of plants and local conditions surrounding an industry such as ours makes it practically impossible to regiment a whole industry under strict rules.

When attempts are made to establish standards of any kind on a national basis, you will find that certain companies in an industry, owing to a process of development over a period of years, have established very high standards along certain lines, one company in one way and another in some other way. These high standards are attained only as a result of an evolutionary process. It is obvious that a Federal Government agency entering any one of the fields where standards of this kind are set up is bound to attempt to force the general adoption of the high standards found in any one company. Let us take, for instance, this matter of accident prevention. Some of the companies which have expanded fairly rapidly within the last ten years and which have purchased new equipment and have had a volume production which justified capital investment in labor-saving machinery have their plants so far as their equipment is concerned on as high standards of safety as could possibly be demanded by any government agency. Such plants usually are also large enough to have experts who are thinking along these lines and are convinced that it is good business to prevent accidents. On the other hand there are many smaller companies who may of necessity be operating with semi-obsolete equipment, whose production methods are entirely different, but who, nevertheless, may be just as keenly alive to the necessity of accident prevention and may be compensating to some extent for their differences in equipment by greater vigilance in accident prevention, to whom it would mean bankruptcy for machinery codes to be set up by the Government.

I believe the attitude taken by many of our State Industrial Commissions in working in cooperation with industry is the sanest approach to this problem. We have instances in this country today of the progress which State agencies and industries have made through cooperation in accident prevention. Ohio, New Jersey, and New York are outstanding examples.

Americans as a rule are inclined to take the attitude that we must do everything that we want to do in the shortest possible space of time. We take an

[1] Address at annual meeting of National Safety Council, Louisville, Ky., Oct. 16, 1935.
[2] "Accident Frequency Rates," INDIA RUBBER WORLD, July 1, 1935, pp. 41-42.

CYRUS S. CHING, director of industrial and public relations of United States Rubber Products, Inc., 1790 Broadway, New York, N. Y., is widely regarded as an outstanding authority on all phases of employe-employer relations. Equipped with a legal training, member of the Massachusetts bar, "Cy," as he is familiarly known to his innumerable friends, has addressed his student and business life to the many and complex problems of the interrelations of human beings and industry.

Prior to joining the United States Rubber Co. in his present capacity in 1919, Mr. Ching was assistant to the president of the Boston Elevated Railway. He is actively engaged in the affairs of the American Management Association, of which he was formerly president. During the life of NRA Mr. Ching was a member of the Regional Labor Board as the representative of industry.

idea like the establishment of fair trade practices with minimum wages and maximum hours in industry and rush in and overnight attempt to put every activity of our American life under codes and set up Code Authorities inexperienced in judicial procedure and in cooperative effort. They are bound to take the attitude that if some fellow does not do what they want him to, he ought to be put in jail. The result is, as we have seen in NRA, a complete collapse. The Supreme Court decision of May 27 in connection with NRA was merely the funeral services over an already dead body because it was found long before the decision was made that enforcement of NRA was impossible because of the attempt to regulate everybody and everything. On the other hand, had we been content to proceed along the evolutionary rather than the revolutionary path we probably would have had today in many of our large industries codes of fair trade practice working successfully, with continuous additions to the groups. Any attempts on the part of either the Federal Government or States to set up very rigid and very high standards for accident prevention covering the country as a whole are bound to result the same way.

To go back a quarter of a century, at the time when workmen's compensation laws were first being introduced, industry fought these laws and with very good reason. They feared that there would be more and more in the way of State regulation. In many instances their fears were justified both as to factory inspection procedure as well as to the administration of the laws. The positions were filled by broken-down, deserving members of each political party who had no conception of the problems of industry and no idea at all in regard to cooperation between State Government and industry, and whose sole method of getting results was to wave the baton of authority. Many times in those days the representatives of the State were perfectly willing to be approached with proposals for fixing things which State inspectors had found. We went through that period, but gradually it began to dawn both on State authorities and on industry that there was a problem to be solved, and by an evolutionary process we have reached a place today where we have very much higher standards in factory regulations and also very much higher standards in the type of people enforcing these regulations.

I believe there is still much to be done. Far be it from me to outline the duties of a factory inspector. There are many units in every industry which, as a matter of pride and good management, will always have the highest established standards for cleanliness, fire prevention, accident prevention, and other such practices. Factory inspectors, if at all observant, will very readily know who those people are, and instead of harassing these companies on picayune things, will accomplish much better results by concentrating their efforts on certain units in industries where the management either through lack of information or inexperience is not paying the attention it should to such matters. There is no manager in an industry, however small, who is so cold-blooded that he doesn't care whether accidents happen, but many times you will find that management is not conscious of the keg of dynamite it is sitting on. A friendly word and a checking up by State authorities in these cases would be extremely beneficial.

There is no unit in an industry carrying on safety work which is not pleased to have the opportunity to pass along information to any one else either in the same or other industries regarding methods in preventing accidents. This is a subject of such a non-controversial nature and which arouses so much enthusiasm among those engaged in it that I find them all anxious to help the other fellow in the reduction of his accidents. If the factory inspectors in their contacts with units which have established high standards will in a cooperative way attempt to transplant some of these methods to those not having such standards, a great deal of good can be accomplished.

There is nothing new in what I have said. The application of the principles of this problem is the same old story—that permanent progress is made only through evolutionary process and cooperation and cannot be obtained by the use of the straitjacket and the policeman's club.

Para-Graphs

(*Continued from page* 33)

perior in preventing the vulcanized and molded materials from adhering to the mold.

WIRE INSULATION COMPOUND. The following formula provides an insulating compound capable of extremely rapid vulcanization and yet one which, when mixed and applied in accordance with the process defined, does not vulcanize during the extruding operation.

	%
Smoked sheet rubber	22.0
Reclaimed rubber (boot and shoe)	10.0
Reclaimed rubber (whole tire)	10.0
Mineral rubber	5.0
Whiting	44.7
Zinc oxide	2.5
Antioxidant	1.5
Sulphur	1.0
Softener (pine tar oil)	3.0
Ultra-accelerator	0.3
	100.0

This stock is adapted for continuous vulcanizing carried on at a high rate of speed. For example in coating No. 17 Brown and Sharpe gage drop wire with a coating $^{3}/_{64}$-inch thick satisfactory results are obtained when the speed of travel is from 400 to 500 feet per minute when using a vulcanizing chamber 100 feet long. The corresponding vulcanizing periods for these speeds would be 12 to 15 seconds.

THIOKOL MOLDING POWDER. Thiokol molding powder is fully vulcanized and compounded and merely requires forming in a press for three minutes at approximately 300° F. In this manner synthetic oilproof molded articles can be produced at greatly reduced costs. At present two types of Thiokol molding powder are available: No. 1 with a hardness of 72, by Shore Durometer, and No. 2 with a hardness of 55. Both powders are black. The material has excellent aging qualities and unusual stability against gasoline, oxidation, and ozone. The odor is mild and unobjectionable.

Compounding Ingredients[1]

Compositions—Properties—Functions

MINERAL pigments for coloring rubber compositions are limited to a few metallic oxides, and sulphides able to resist the action of sulphur in hot vulcanization. The list available includes oxides of iron, chromium and zinc, the sulphides of antimony cadmium, mercury, and zinc. Added to these are ultramarine and Prussian blue. The color effects possible with these materials are greatly restricted. However the iron oxide and antimony sulphide reds are still essential and highly regarded in the rubber industry as color pigments. All black pigments are essentially carbon. They are omitted here because black is not color, but the absence of it.

Mineral Colors

Blue

Prussian Blue

CHEMICAL COMPOSITION. Iron ferrocyanide.
SELLER. American Cyanamid & Chemical Corp.
APPLICATIONS. Molded articles, druggists' sundries.
PHYSICAL STATE. Fine blue powder.
PROPERTIES. Sp. gr., 1.85. Stable. Odorless. Non-toxic.
PURPOSE AND FUNCTION. Color effect.
METHODS OF USE. Add directly to the rubber.
VULCANIZATION. No effect on cure.
PATENTS. Not disclosed.

Ultramarine

CHEMICAL COMPOSITION. Complex sulphide and silicate.
SELLER. Wishnick-Tumpeer, Inc., and Whittaker, Clark & Daniels, Inc.
APPLICATIONS. Footwear, mechanicals, molded articles.
PHYSICAL STATE. Fine powder. Color, bright transparent blue.
PROPERTIES. Sp. gr., 2.35. Stable. Odorless. Non-toxic.
PURPOSE AND FUNCTION. Color effect and elimination of yellowish cast of white pigments.
METHODS OF USE. Add directly to the rubber.
VULCANIZATION. No effect on cure.
PATENTS. Not disclosed.

Brown

Mapico Brown

CHEMICAL COMPOSITION. Iron oxide 97%, absorbed water 2%.
SELLER. Binney & Smith Co.
APPLICATIONS. Footwear, heels and soles, insulation and extruded products, druggists' sundries.
PHYSICAL STATE. Particle size, less than one micron. Velvety texture, 99.5% through 325 mesh.
PROPERTIES. Sp. gr., 5.14. Stable. Odorless. Non-toxic.
PURPOSE AND FUNCTION. For color effect.
METHODS OF USE. Add directly to the rubber.
VULCANIZATION. No effect on cure.
PATENTS. Not disclosed.

Green

Chrome Green

CHEMICAL COMPOSITION. Chromium oxide.
SELLER. C. K. Williams & Co.
APPLICATIONS. Inner tubes, footwear, mechanicals, heels, soles, insulation and extruded products, druggists' sundries.
PHYSICAL STATE. Green powder. Particle size, approximately 0.4-micron, 99% through 325 mesh.
PROPERTIES. Sp. gr., 5.20. Stable. Odorless. Non-toxic.
PURPOSE AND FUNCTION. Color effect and abrasive resistance.
METHODS OF USE. Add directly to the rubber.
VULCANIZATION. No effect on cure.
PATENTS. Not disclosed.

Chromium Green

CHEMICAL COMPOSITION. Chromium oxide 99%.
SELLER. Wishnick-Tumpeer, Inc.
APPLICATIONS. Inner tubes, footwear, mechanicals, heels and soles, druggists' sundries.
PHYSICAL STATE. Medium green powder of hard texture. Residue on 325-mesh screen 0.7%.
PROPERTIES. Spr. gr., 4.95. Stable. Odorless. Non-toxic.
PURPOSE AND FUNCTION. Color effect.
METHODS OF USE. Add directly to the rubber.
VULCANIZATION. No effect on cure.
PATENTS. Not disclosed.

Guignet's Green

CHEMICAL COMPOSITION. Hydrated chromium oxide.
SELLER. C. K. Williams & Co.
APPLICATIONS. Inner tubes, footwear, mechanicals, molded articles, insulation and extruded products, druggists' sundries.
PHYSICAL STATE. Bluish green powder 99+% through 325 mesh.
PROPERTIES. Sp. gr., 3.20. Stable. Odorless. Non-toxic.
PURPOSE AND FUNCTION. Color effect.
METHODS OF USE. Add directly to the rubber.
VULCANIZATION. No effect on cure.
PATENTS. Not disclosed.

Red

Antimony, Crimson

CHEMICAL COMPOSITION. Antimony trisulphide and antimony pentasulphide with or without free sulphur.
SELLER. American Cyanamid & Chemical Corp.
APPLICATIONS. Inner tubes, footwear, heels and soles, druggists' sundries.
PHYSICAL STATE. Crimson colored powder of 300-mesh fineness.
PROPERTIES. Sp. gr., 3.60. Stable. Odorless. Non-toxic.
PURPOSE AND FUNCTION. Color effect.
METHODS OF USE. Add directly to the rubber.
VULCANIZATION. No effect on cure.
PATENTS. Not disclosed.

Antimony, RMP Crimson and Golden

CHEMICAL COMPOSITION. Antimony trisulphide and antimony pentasulphide with or without free sulphur; with or without calcium sulphate.
SELLER. Rare Metal Products Co.
APPLICATIONS. Carcass, inner tubes, footwear, hose, molded articles, heels and soles, druggists' sundries.
PHYSICAL STATE. A finely divided amorphous precipitate.
PROPERTIES. Sp. gr., 3.3. Color range from light orange to deep crimson. Stable. Odorless. Non-toxic.
PURPOSE AND FUNCTION. Imparts characteristic pleasing appearance, and in certain compounds notably improves aging. Prevents sulphur bloom in unaccelerated stocks.
METHODS OF USE. Add directly to the rubber.
VULCANIZATION. Accelerates cure in absence of organic accelerators. In presence of organic accelerators, behaves variously, depending upon the type present.
PATENTS. Not disclosed.

Mapico Red

CHEMICAL COMPOSITION. Iron oxide 99%.
SELLER. Binney & Smith Co.
APPLICATIONS. Inner tubes, footwear, mechanicals, molded articles, heels and soles, insulation and extruded products, druggists' sundries.

[1] Continued from INDIA RUBBER WORLD, Oct. 1, 1935, pp. 33-36, 41.

PHYSICAL STATE. Particle size, less than one micron. Smooth texture, 99.5% through 325 mesh. Color varies from light yellowish red to deep purplish red.
PROPERTIES. Sp. gr., 5.14. Stable. Odorless. Non-toxic.
PURPOSE AND FUNCTION. For color effect.
METHODS OF USE. Add directly to the rubber.
VULCANIZATION. No effect on cure.
PATENTS. Not disclosed.

Rub-Er-Red

CHEMICAL COMPOSITION. Iron oxide.
SELLER. C. K. Williams & Co.
APPLICATIONS. Inner tubes, footwear, mechanicals, molded articles, heels, soles, insulation and extruded products, druggists' sundries.
PHYSICAL STATE. Light salmon-red powder. Average particle size, 0.35-micron, 99+% through 325 mesh.
PROPERTIES. Sp. gr., 5.15. Stable. Odorless. Non-toxic.
PURPOSE AND FUNCTION. Color effect.
METHODS OF USE. Add directly to the rubber.
VULCANIZATION. No effect on cure.
PATENTS. Not disclosed.

White

Albalith Black Label—11R

CHEMICAL COMPOSITION. Approximately 30% zinc sulphide, 70% barium sulphate.
SELLER. New Jersey Zinc Sales Co., Inc.
APPLICATIONS. Inner tubes, footwear, mechanicals, molded articles, heels and soles, insulation and extruded products.
PHYSICAL STATE. Fine white powder. Particle size, approximately 0.25-micron.
PROPERTIES. Sp. gr., 4.15. Stable. Odorless. Non-toxic.
PURPOSE AND FUNCTION. Inert filler. Color effect.
METHODS OF USE. Add directly to the rubber, preferably in the form of a master batch.
VULCANIZATION. No effect on cure.
PATENTS. Not disclosed.

Azolith

CHEMICAL COMPOSITION. Zinc sulphide 29%, barium sulphate 71%.
SELLER. American Zinc Sales Co.
APPLICATIONS. Footwear, molded articles, heels and soles, insulation and extruded products, druggists' sundries.
PHYSICAL STATE. Finely divided white pigments possessing good texture. Particle size, about 0.25-micron.
PROPERTIES. Sp. gr., 4.20. Stable. Odorless. Non-toxic.
PURPOSE AND FUNCTION. Color effect. The use of from 30 to 50% of an American process zinc oxide such as Azo-44 is recommended for use with Azolith because zinc oxide stabilizes the color of white rubber products.
METHODS OF USE. Add directly to the rubber.
VULCANIZATION. No effect on cure.
PATENTS. Not disclosed.

Cryptone BA-19

CHEMICAL COMPOSITION. Approximately 50% zinc sulphide, 50% barium sulphate.
SELLER. New Jersey Zinc Sales Co., Inc.
APPLICATIONS. Inner tubes, molded articles, insulation and extruded products.
PHYSICAL STATE. Fine white powder. Approximate particle size, 0.25-micron.
PROPERTIES. Sp. gr., 4.06. Stable. Odorless. Non-toxic.
PURPOSE AND FUNCTION. Color effect and inert filler.
METHODS OF USE. Add directly to the rubber, preferably in the form of a master batch.
VULCANIZATION. No effect on cure.
PATENTS. Not disclosed.

Cryptone ZS-20

CHEMICAL COMPOSITION. Technically pure zinc sulphide.
SELLER. New Jersey Zinc Sales Co., Inc.
APPLICATIONS. Insulation and extruded products, dental rubber, white and tinted hard rubber.
PHYSICAL STATE. White powder. Particle size, approximately 0.30-micron.
PROPERTIES. Sp. gr., 3.92. Stable. Odorless. Non-toxic.
PURPOSE AND FUNCTION. Color effect and inert filler.
METHODS OF USE. Add directly to the rubber.
VULCANIZATION. No effect on cure.
PATENTS. Not disclosed.

Cryptone ZS-86

CHEMICAL COMPOSITION. Technically pure zinc sulphide.
SELLER. New Jersey Zinc Sales Co., Inc.
APPLICATIONS. Insulation and extruded products. Especially recommended for white soft rubber and latex compounds.
PHYSICAL STATE. Fine white powder. Particle size, approximately 0.25-micron.
PROPERTIES. Sp. gr., 3.92. Stable. Odorless. Non-toxic.
PURPOSE AND FUNCTION. Color effect.
METHODS OF USE. Add directly to the rubber.
VULCANIZATION. No effect on cure.
PATENTS. Not disclosed.

Lithopone (Unbranded)

CHEMICAL COMPOSITION. Zinc sulphide 30%, barium sulphate 70%.
SELLER. Whittaker, Clark & Daniels, Inc.
APPLICATIONS. Belting, hose, molded articles, druggists' sundries.
PHYSICAL STATE. Fine white powder, 95 to 97% through 325 mesh.
PROPERTIES. Sp. gr., 4.20. Stable. Odorless. Non-toxic.
PURPOSE AND FUNCTION. Color effect.
METHODS OF USE. Add directly to the rubber.
VULCANIZATION. No effect on cure.
PATENTS. Not disclosed.

Ray-Bar

CHEMICAL COMPOSITION. Titanium dioxide 25%, barium sulphate 75%.
SELLER. R. T. Vanderbilt Co.
APPLICATIONS. In any white rubber goods.
PHYSICAL STATE. Fine texture white powder. 100% through 300 mesh.
PROPERTIES. Sp. gr., 4.30. Stable. Odorless. Non-toxic.
PURPOSE AND FUNCTION. Coloring rubber white.
METHODS OF USE. Add directly to the rubber.
VULCANIZATION. No effect on cure.
PATENTS. Not disclosed.

Ray-Cal

CHEMICAL COMPOSITION. Titanium dioxide 30%, calcium sulphate 70%.
SELLER. R. T. Vanderbilt Co.
APPLICATIONS. In any white rubber goods.
PHYSICAL STATE. Fine texture white powder. 100% through 300 mesh.
PROPERTIES. Sp. gr., 3.13. Stable. Odorless. Non-toxic.
PURPOSE AND FUNCTION. Coloring rubber white.
METHODS OF USE. Add directly to the rubber.
VULCANIZATION. No effect on cure.
PATENTS. Not disclosed.

Rayox

CHEMICAL COMPOSITION. Titanium dioxide 98.5%.
SELLER. R. T. Vanderbilt Co.
APPLICATIONS. In any white rubber goods.
PHYSICAL STATE. White powder. Particle size, approximately 0.3-micron. Free from copper, manganese, and lead.
PROPERTIES. Sp. gr., 3.9. Stable. Odorless. Non-toxic. Strongly resistant to acids and alkalies.
PURPOSE AND FUNCTION. Coloring rubber white.
METHODS OF USE. Add directly to the rubber.
VULCANIZATION. No effect on cure.
PATENTS. Not disclosed.

Sunolith

CHEMICAL COMPOSITION. Zinc sulphide 29%, barium sulphate 71%.
SELLER. Wishnick-Tumpeer, Inc.
APPLICATIONS. Footwear, mechanicals, molded articles, heels and soles, druggists' sundries.
PHYSICAL STATE. Pure white powder, very soft texture, 0.01% residue on 325 mesh.
PROPERTIES. Sp. gr., 4.2. Stable. Odorless. Non-toxic.
PURPOSE AND FUNCTION. Color effect.
METHODS OF USE. Add directly to the rubber.
VULCANIZATION. No effect on cure.
PATENTS. Not disclosed.

Titanox-A (Titanium Dioxide)

CHEMICAL COMPOSITION. Titanium dioxide 98.5% (minimum).
SELLER. Titanium Pigment Co., Inc.
APPLICATIONS. Footwear, molded articles, heels and soles, in-

sulation and extruded products, druggists' sundries, sheeting, garments, bathing caps, tiling, tire sidewalls.
PHYSICAL STATE. White powder. Particle size, approximately 0.2-micron. Free from copper and manganese.
PROPERTIES. Sp. gr., 3.9. Stable. Odorless. Non-toxic. Resistant to acids and alkalies.
PURPOSE AND FUNCTION. White pigment.
METHODS OF USE. Add directly to the rubber.
VULCANIZATION. No effect on cure.
PATENTS. Not disclosed.

Titanox-B (Titanium Barium Pigment)

CHEMICAL COMPOSITION. 25% Titanium dioxide and 75% precipitated barium sulphate base.
SELLER. Titanium Pigment Co., Inc.
APPLICATIONS. Footwear, mechanicals, molded articles, heels and soles, insulation and extruded products, druggists' sundries, sheeting, garments, tiling, etc.
PHYSICAL STATE. Fine white powder. Average particle size, 0.55-micron.
PROPERTIES. Sp. gr., 4.3. Stable. Odorless. Non-toxic. Resistant to acids and alkalies.
PURPOSE AND FUNCTION. White pigment.
METHODS OF USE. Add directly to the rubber.
VULCANIZATION. No effect on cure.
PATENTS. Not disclosed.

Titanox-C (Titanium Calcium Pigment)

CHEMICAL COMPOSITION. 30% Titanium dioxide and 70% precipitated calcium sulphate base.
SELLER. Titanium Pigment Co., Inc.
APPLICATIONS. Footwear, mechanicals, molded articles, heels and soles, insulation and extruded products, sheeting, garments, tiling, etc.
PHYSICAL STATE. Fine white powder. Average particle size, 0.55-micron.
PROPERTIES. Sp. gr., 3.1. Stable. Odorless. Non-toxic. Resistant to acids and alkalies.
PURPOSE AND FUNCTION. White pigment.
METHODS OF USE. Add directly to the rubber.
VULCANIZATION. No effect on cure.
PATENTS. Not disclosed.

Ti-Tone

CHEMICAL COMPOSITION. A Titanium reenforced lithopone, containing about 15% Titanium dioxide, 60% barium sulphate, and 25% zinc sulphide.
SELLER. E. I. du Pont de Nemours & Co., Inc.
APPLICATIONS. Footwear, mechanicals, molded articles, heels and soles, insulation and extruded products, druggists' sundries.
PHYSICAL STATE. Finely ground white powder.
PROPERTIES. Spr. gr., 4.25. Stable. Odorless. Non-toxic. A light white pigment with 60% greater covering power than lithopone.
PURPOSE AND FUNCTION. Color effect.
METHODS OF USE. Add directly to the rubber.
VULCANIZATION. No effect on cure.
PATENTS. Not disclosed.

Yellow

Mapico Yellow

CHEMICAL COMPOSITION. Hydrated iron oxide 98%.
SELLER. Binney & Smith Co.
APPLICATIONS. Mechanicals, etc.
PHYSICAL STATE. Particle size, less than 0.5-micron. Very smooth texture, 99.9% through 325 mesh. Color varies from greenish yellow to deep reddish yellow.
PROPERTIES. Sp. gr., 2.80. Stable. Odorless. Non-toxic.
PURPOSE AND FUNCTION. Color effect.
METHODS OF USE. Add directly to the rubber.
VULCANIZATION. No effect on cure.
PATENTS. Not disclosed.

Addenda

Accelerator

Ovac

CHEMICAL COMPOSITION. Thiozole-aldehyde amine class.
SELLER. Naugatuck Chemical.
APPLICATIONS. Especially suited for tire tread stocks. Suitable as a general accelerator except in dead white stocks.
PHYSICAL STATE. Yellow powder.
PROPERTIES. Sp. gr., 1.40. Stable. Slight odor characteristics of thiozole bodies. Non-toxic.
PURPOSE AND FUNCTION. Improves resistance to flex-cracking of tire tread stocks.
METHODS OF USE. Add directly to the rubber. Requires presence of fatty acids to develop full value.
VULCANIZATION. Cures at 20 pounds of steam and above.
PATENTS. Not disclosed.

Anti-Scorch and Antioxidant

T-J-B

CHEMICAL COMPOSITION. Diphenyl nitrosamine.
SELLER. Naugatuck Chemical.
APPLICATIONS. Tire and other low temperature stocks.
PHYSICAL STATE. Orange colored powder.
PROPERTIES. Sp. gr., 1.24. Melting point, about 63° C. (145.4° F..) Soluble in benzol and similar hydrocarbon solvents; insoluble in water; slightly soluble in cold alcohol. Stable. Aromatic odor. Non-toxic.
PURPOSE AND FUNCTION. Functions as anti-scorch with carbon disulphide class of accelerators and their derivatives.
METHODS OF USE. Mill with rubber prior to addition of sulphur. Usually from 0.25 to 0.50% on the rubber is sufficient.
VULCANIZATION. Should not affect cure unless more than 1% is used, when it slightly retards the cure.
PATENTS. Not disclosed.

Oil Resister

AXF

CHEMICAL COMPOSITION. Pure hydrocarbon material.
SELLER. Naugatuck Chemical.
APPLICATIONS. Oil and solvent resistant products in conjunction with DuPrene, Thiokol, or rubber.
PHYSICAL STATE. Brown soft solid.
PROPERTIES. Sp. gr., 1.097. Chemically inert. Insoluble and non-swelling in practically all solvents, but not hardened by heat or sulphur. Stable. Odorless. Non-toxic.
PURPOSE AND FUNCTION. Plasticizes DuPrene and Thiokol and improves their processing qualities. Also acts as an anti-scorch with DuPrene in processing and storage. Improves oil and solvent resistance of DuPrene and rubber. Improves ozone resistance.
METHODS OF USE. Can be handled and processed like crude rubber.
VULCANIZATION. Does not vulcanize.
PATENTS. Not disclosed.

Impact Tester

(*Continued from page* 34)

rate coaxiality of the pendulum axis, scale and pointer, were needed. A new model, shown in the illustration, was therefore built which incorporated these and other mechanical changes and yet gave the same results as the old one, thus preserving the continuity of the test data and making it conform to the requirements of the A.S.T.M. which were based on the older machine and similar ones built by others.

The most important change was the redesign of the pendulum which is made of streamlined duralumin tubing welded in the Laboratories experimental shops to form a rigid one-piece arm. The duralumin head is fastened to the arm by machine screws and final balancing is done by the adjustment of brass weights which are attached to the bottom of the head. These weights are also streamlined, which not only keeps down the windage losses, but distributes the weight correctly to balance the arm. The base and frame are made of cast iron in one piece, and built-in sensitive levels are provided. The scale is chromium plated, which not only protects it against the atmosphere, but gives a highly reflecting surface which aids in avoiding parallax errors. To assure coaxiality the bearing, scale, and pointer are supported on a one-piece holder. An improved release mechanism was also provided.

Annals of Rubber[1]

Chronological Record of the Important Events in the History of Rubber

1894. Moore was granted U. S. patent No. 518,112 for bicycle tires built on a drum. The pulley band process and machines for building automobile tires have been developed since then under nearly 100 American and foreign patents.

1896. Grant solid carriage tire patent No. 554,675 was issued February 18.

The B. F. Goodrich Co., Akron, O., made the first fabric clincher-type automobile tire in the 36- by 4-inch size.

1897. The safety cushion rubber heel, U. S. patent No. 618,128, manufactured by O'Sullivan Bros., Lowell, Mass., was the forerunner of the extensive business in rubber soles and heels which became a very popular specialty in the trade.

1898. American Hard Rubber Co., New York, N. Y., was formed by consolidating three of the chief hard rubber companies of the United States. These companies were The India Rubber Comb Co. (N. Y.), directly descended from the company originally licensed to work under the hard rubber patent of Nelson Goodyear; The Butler Hard Rubber Co., (N. Y.), which succeeded in 1883 a former concern in the business; and the Goodrich Hard Rubber Co., Akron, O.

Rubber plantation development was begun in Malaysia.

Goodyear Tire & Rubber Co., Akron, O., was established by Frank A. Seiberling.

The Rubber Sundries Manufacturers' Association was organized in New York, N. Y., on September 6.

Arthur M. Waitt, general master car-builder of the Lake Shore & Michigan Southern Railway, proposed specifications for air-brake hose.

1899. Arthur H. Marks received English patent No. 11,159 and United States patent No. 635,141 for alkali process of reclaiming rubber from vulcanized scrap.

Rubber plantations were started in Ceylon.

New England Rubber Club, Boston, Mass., was organized largely to promote sociability among individuals in the New England rubber trade. Henry C. Pearson, publisher of India Rubber World, was club secretary.

The Rubber Goods Manufacturing Co. was incorporated in January for consolidation of the various mechanical rubber goods manufacturing companies. These were as follows: Mechanical Rubber Co., incorporated in New Jersey, 1892; New York Belting & Packing Co., Ltd., incorporated as the New York Belting & Packing Co. in Connecticut, 1856; Cleveland Rubber Co., incorporated in Ohio, 1872; Chicago Rubber Works, incorporated in Illinois, 1882; Fabric Fire Hose Co., incorporated in New York, 1880; Stoughton Rubber Co., incorporated in Massachusetts, 1889; Peerless Rubber Manufacturing Co., began as Peerless Manufacturing Co. in 1875; Morgan & Wright, Inc., began as a partnership in 1884; and The India Rubber Co., incorporated as the Akron India Rubber Co. in 1895.

1900. The Robins Conveying Belt Co., New York, N. Y., erected a plant to make conveying apparatus.

Rubber hoof pads for horses were a flourishing specialty with mechanical rubber goods plants. The same was true of wired-on solid tires for carriages.

The New England Rubber Club celebrated the centenary of the birth of Charles Goodyear. The dinner was held at the Hotel Essex in Boston, Mass. Speeches were made by Nelson Goodyear, grandson of the illustrious inventor, and prominent leaders in the rubber trade.

Firestone Tire & Rubber Co., Akron, O., was established by Harvey S. Firestone, Sr., on August 3.

1901. William A. Lawrence, New York research chemist, discovered the process of "rubbing and pressure" for the extraction of guayule rubber from the shrub. He is also credited with making guayule marketable.

Kempshall Mfg. Co. was incorporated in New Jersey for the manufacture of golf balls constructed after the patents of Eleazer Kempshall.

1902. Notable activity prevailed in patenting the construction and means of making golf balls.

The Clincher Automobile Tire Manufacturers' Association was organized, operating under the direction of a managing trustee. It was reorganized in 1911, and an executive committee formed to transact its business. The name changed in May, 1917, to The Tire & Rim Association. In 1922 the organization was incorporated, and the name changed to The Tire & Rim Association of America, Inc. In 1929 the name was changed back to The Tire & Rim Association, Inc. Its purpose and function is to standardize and inspect tire rims in the interest of the automotive industry.

1903. Carl Otto Weber, English chemist, published "The Chemistry of Rubber." This was the first contribution connecting under one point of view all the quantitatively and numerically ascertained physical and chemical data concerning caoutchouc.

Le Caoutchouc et la Gutta Percha, French journal of the rubber industry, was founded in Paris, France.

1904. Mechanical Rubber Association was established for furthering the interest of the mechanical rubber goods producers. It expired in 1906.

H. S. Riddle patented the vulcanization of rubber by electricity.

1905. The Manhattan Rubber Mfg. Co., Passaic, N. J., was the first rubber company to recognize the value of guayule rubber in the manufacture of mechanical rubber goods. David A. Cutler, chemist of this company, was the first rubber chemist to credit guayule for its real commercial value.

Plantation rubber appeared commercially in the United States; 145 tons were produced in 1905.

George Oenslager began investigations to improve the value of the low-grade rubber known as Pontianac. This work led to the discovery of means to accelerate vulcanization.

(To be continued)

[1] Continued from India Rubber World, Oct. 1, 1935, p. 42.

Rubber Shoe Cementing

David Phillips

THE compounding of rubber cements and their application to gum footwear in all its waterproof branches is a very broad subject. It is bounded on the one hand by chemical insight into the formulae and curing knowledge required, and on the other, by the customary practices with which cements are applied in the industry at large. The following brief treatment is intended to cover only a few of the many problems involved.

The basic difference in construction between leather and rubber footwear is the manner in which the various component parts are held together in the completed article. In leather shoes, for example, we instinctively think of tacks and thread as the binding agents. But gum footwear, except for its trimmings, is customarily held together almost entirely by different grades of rubber cements.

The importance of using suitable cement materials and proper methods for their application cannot be overemphasized as gum footwear, like any other structure, can be no stronger, even after vulcanization, than its weakest joint. Considerable care must therefore be taken during its making thoroughly to perform these cementing tasks.

Preparatory Cementing

Rubber shoe manufacturers produce almost every kind of foot covering imaginable with the possible exception of evening slippers. Picking any shoe at random such as the common rubber or gum shoe, it can be divided for cement operations into component pieces about as follows.

Linings and innersoles are the foundation of most varieties, and their sides adjacent to the form or shoe last are customarily left with as smooth and non-sticking a surface as possible in order that the completed shoe can be removed with little effort after curing. It can readily be seen that it is of utmost importance strictly to confine such preparatory cementing to the areas not intended to come into contact with the wooden or metal shoe forms.

Linings are made from a variety of materials and after being calender coated and piled in layers are die cut and made ready for cementing. For many years cut linings were edge cemented by the "shingle" method; the linings with their rubber coated side next to a metal table plate are carefully placed on top of one another, having their edges laid just inside each underlying ply to give a uniform margin wherever possible. Heavy body rubber and naphtha cement is next applied with a hand scraper or paddle until all the exposed marginal edges have been thoroughly coated.

United Shoe Machinery Corp.

Rotary Cementing Machine—Model RB

For Cementing Insoles—Normally Installed in Connection with a Belt Conveyer for Drying Purposes

Another manner in which the lasting edges of gum shoe linings have been coated is carried out by using a metal shield or template carefully placed on top of the cut part, leaving the correct uniform margin exposed for hand cementing with a metal scraper. The edges of some kinds of linings are occasionally cemented by machines, but in many instances the plied or "shingled" method persists as a very effective way in which to edge coat a considerable number of these foundation pieces at one single handling.

Inner Sole Cementing

Innersoles are also a very important part of the shoe structure as they act as the first binding link with which the linings are held in formed position about the shoe last. The cementing of the rubberized or composition surfaces which are to receive the lining edges requires careful attention if a satisfactory union between these two members is to be obtained. Practically all innersole cementing is carried out by rotary machines, power-driven, especially adapted for this kind of work. The cut soles are generally fed into a pair of revolving rolls, one of which is continually covered with fresh medium bodied cement, or else they are placed upon a canvas belt leading to them. As the parts pass between these rolls, they are cement coated upon the rubberized side by frictional or rolling contact. Once clear of the cementing machine, the innersole is whisked away by a long drying belt.

United Shoe Machinery Corp.

Top Cementing Machine Model RB

For Cementing Marginal Edge of Canvas Uppers and also Used with Marginal Cementing of Waterproof Footwear—May Be Equipped with a Double Cementing Attachment for Cementing Both Sides Simultaneously

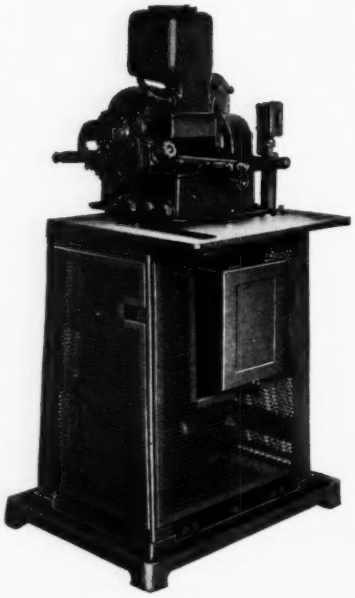
Labor costs are exceedingly low in some foreign countries, and it is sometimes the practice merely to lay each sole down on a table top and brush coat it by hand with light bodied cement. Such a system would obviously not be profitable in any country actively engaged in machine-age production methods.

Rag Heels, Stiffeners, and Counters

These parts generally require cementing on both sides because of their composition ma-

terials and location in the middle layer of the shoe structure. Before the subdivided task system of manufacturing made cementing individual pieces a specialized operation, these various parts of gum footwear were coated as needed to complete the ticket by hand brushing as they lay upon a metal slab at the individual worker's assembling bench.

Modernized equipment provides double cementing machines which operate in much the same manner as the single coating devices. After being likewise fed through two or more revolving, cement coated rolls, the pieces are air dried as they emerge and are conveyed to a distant, convenient point for further checking and redistribution in containers to the maker's tables.



United Shoe Machinery Corp.

Double Cementing Machine—Model B (Regular)

For Cementing Fillers, Juniors, Stiffeners, Etc., Cementing Both Sides Simultaneously—Usually Installed in Connection with a Wire Belt Conveyer for Drying Purposes

Outersole Cementing

Outersoles in general are of two classifications: the plain or straight edged sole, and the overlapping or so-called "rolled" sole. In both cases the sole stock, dried by surface aging from the time of calendering, must be carefully freshened with a thin cement applied to the adhering areas by brushing with either a sponge or brush just prior to placing it on to the shoe.

Perhaps the greatest difficulty in outersole cementing is to avoid overdoing the job. Overrunning of cement on to the edge or tread side of the sole is unsightly and, if too freely applied, results in a decided softening or flattening at the edges. It is extremely important, though, to carry the cement up to the very edge of the angled portion in order that its full contact with the upper will remain tightly sealed after vulcanization. Careful outersole cementing assures the buyer that the tread of his shoe will not split away at the edges if it has been properly rolled into position.

Outersoles are also cemented by machines similar in their operation to those used for innersoles and rag or composition parts. In some cases they are then air dried upon moving belts before being stored away in lightproof containers to await delivery to the shoe makers.

Cementing Highly Specialized

For many years naphtha cements have been used to bind the parts of gum footwear into a completely vulcanized article. Naphtha fire hazards until recent years were not taken very seriously, and the individual bench shoe makers were expected to perform most of the cementing operations required in the process. It was customary to keep these highly inflammable plastics in open containers, and as a rule being supplied of heavy body, they were worked down to the desired consistency by the simple expedient of pouring naphtha into the container and hand stirring the contents until it was deemed satisfactory for the job at hand.

Today rubber and naphtha cementing is recognized as a dangerous fire hazard; so considerable caution is exercised in its preparation. Firepoof buildings are frequently set aside for such purposes or for glove and other dipping processes which use highly volatile materials or cement-like liquids in their building up process. The use of centralized machines for cementing has done much to eliminate hazards in individual mixing at the maker's bench and has given greater uniformity to the effectiveness of the cemented joints binding the footwear.

United Shoe Machinery Corp.

Double Cementing Machine—Model B

Modification of Model B (Regular), Fitted for Straight-Edge Outsole Work and Frequently Located Adjacent Outsole Cutting Machine and in Conjunction with a Wire Belt Conveyer for Drying

To obtain best results for each kind of adhesive joint in the shoe, special knowledge of cement application and its reactions during the curing process is a valuable asset. Fabrics such as nets and other extensible materials as are used in linings require a heavy bodied cement if they are to withstand the strains imposed upon them in the lasting about the shoe form. Other parts need merely a naphtha wash or an application of light bodied cement to freshen the air dried surfaces and prepare them for the ultimate fusing process. Materials and their faculty to soak up or absorb cements vary to such a large degree that only by carefully testing results of actual joints under wearing service conditions can the body and method of application be relied upon to give satisfactory results.

Heat and Sunlight Must Be Avoided

Perhaps rubber's greatest enemies and those which affect its physical properties the most are heat and sunlight. This point holds true whether the gum compounds are cured or uncured. In order properly to protect uncured surfaces during their handling in the manufacturing stages recourse is frequently taken to powdering or dusting the parts as they are stacked upon one another. This dusting prevents sticking and surface injury. Another protective measure aimed chiefly to circumvent deterioration by sunlight and air is the widespread use of trays or books between the fabric leaves of which layer upon layer of small cemented parts are stored until used.

We have learned from tire tube patching that a dirty surface makes a poor patch and that a roughened and cleaned surface is desirable. Removing the excess dusting powders from the stored gum compounds by naphtha washing is a big help in obtaining satisfactory cemented

(*Continued on page* 47)

Tire Repair Cores

Joseph Rossman, Ph.D.

IN RETREADING or repairing tires it is necessary internally to expand the tire during vulcanization. This expansion is accomplished by inserting a core in the tire which is expanded either by pneumatic or mechanical means. Numerous cores have been devised for this purpose. The following abstracts give a survey of the United States patents issued for such cores.

1. Blanchard, 966,302, Aug. 2, 1910. An airbag for vulcanizing tires has removable metal caps at its ends. An inner tube is inserted in the bag to inflate it.

2. Holcomb, 976,262, Nov. 22, 1910. A collapsible core for inserting in a tire to be retreaded is made up of a plurality of independent longitudinal sections arranged together to approximate the shape of the interior of the tire, expansible binders for holding the parts of the core in normal position, and means for expanding the core.

3. Trump, 1,047,594, Dec. 17, 1912. An expansible core for repairing tires consists of a cylindrically shaped bag of slightly extensible material provided with one or more wedging elements fitting snugly within the bag and capable of being longitudinally shifted by means which can be reached through the open part of the tire. The interior of the bag is filled with a plurality of small, movable bodies such as shot, pebbles, sand, which are caused to spread laterally under the longitudinal pressure exerted by the wedging element as it is shifted to cause the bag to expand and fill the interior of the cavity of the tire and thereby sustain the wall of the tire during the repair.

4. Raflovich, 1,048,208, Dec. 24, 1912. A mandrel for supporting a tire to be repaired consists of an inflatable tube wrapped with spiral and longitudinal strips of canvas.

5. Hinds, 1,068,653, July 29, 1913. An expander for a tire comprises a core composed of sections, a shoe on the outside of the core, a screw passing transversely through the core and having its end engaging the shoe, and means between the screw and core sections whereby they and the shoe are moved outwardly by the turning of the screw.

6. Hinds, 1,068,654, July 29, 1913. An expander comprises a core body divided longitudinally into members adapted to spread apart, a shoe bridging the space between the members, and means within the core body for movably connecting members and shoe together; the means consist of retaining lugs on the shoe extending between and connected with the members.

7. Giusti, 1,081,824, Dec. 16, 1913. An expandible core has a casing, a pair of hollow heat applying members engaged with the casing, the members having in their adjacent surfaces inclined recesses, nuts secured in the opposing faces of the members, threaded expanding rods engaged with the nuts, tapered expanding heads on the inner ends of the rods to engage the inclined recesses in the opposing sides of the heat applying members whereby, when the rods are turned in the proper direction for projecting the heads, the members will be expanded in the shell or casing and the latter expanded in the tire.

8. Newsom, 1,084,895, Jan. 20, 1914. A support for a tire consists of an inflatable rubber tube inserted in a flexible cover having a smooth rounded outer surface and provided in its side with a longitudinally extending slit and in its end with an aperture.

9. Powell, 1,140,527, May 25, 1915. A distention device for tires comprises an elongated airtight bag, outwardly expansible cylindrical heads within and secured to the ends of the bag to close it tightly, and a rod conforming to the curvature of the tire and having its extremities connected with the respective heads.

10. Johnson and Alsten, 1,148,171, July 27, 1915. A pneumatic core for use in repairing tires comprises an outer flexible but substantially non-elastic curved bag with an opening extending longitudinally thereof on its concave side, each edge of the opening extending beyond the middle of the concave side of the bag so as to overlap each other, the ends of the outer overlapping edge being secured to the outer surface of the bag at opposite ends thereof, and an inner tube of elastic material adapted to be introduced and removed through the opening.

11. Brophy, 1,151,859, Aug. 31, 1915. An airbag comprises an expansible tubular body, resilient members inserted in its ends, outer members cooperative with the resilient members to clamp the ends, means passed through the members to bring them in clamping relation to each other, one of the means being formed with an air inlet, and extensible members connected with the first-named means.

12. Hershon, 1,162,235, Nov. 30, 1915. A vulcanizing apparatus for repairing tires has an inner member, a sectional outer member carried by the inner member, an expanding member to effect movement of the sectional member in one direction, and a separating member to effect movement of the sectional member in a direction substantially at right angles to the first-mentioned direction.

13. Griffith, 1,163,908, Dec. 14, 1915. An airbag comprises a body portion having an outer casing of flexible material, a stem of similar material integral therewith, and a reenforcing portion connecting body and stem.

14. Heinig and Johnston, 1,167,172, Jan. 4, 1916. A core for vulcanizing purposes comprises a flexible tubular member, plugs in the ends of and forming steamtight closures for such member, a bracing element interposed between the plugs and connected thereto, means for admitting steam through one of the plugs, and a water outlet pipe passing through the other plug and having the intake end thereof at the lowest part of the interior of the core.

15. Wood, 1,207,117, Dec. 5, 1916. A pad for vulcanizing tire casings includes a base curved longitudinally, a flexible casing curved laterally, a sub-base and means to attach it to the base with the sides of the casing interposed between base and sub-base, a steam chamber in the casing, and a granular filling between the walls of the steam chamber and the casing.

16. Blodgett, 1,214,268, Jan. 30, 1917. An airbag com-

prises an airtight elastic rubber sack, a valve to supply air for inflating the sack, a central rigid member within the sack, preventing its longitudinal expansion, and a strong elastic knit fabric casing surrounding the outer surface of the sack and detachably fastened thereto at both ends so that the sack can be removed without destroying its airtightness.

17. Rasmussen, 1,226,596, May 15, 1917. A pressure bag consists of an inflatable tube having a disk member in each end adapted to provide closure means, the end of the tube member extending over the outer edge and into engagement with the ends of the disk, a retaining ring right-angular in cross-section clamping the tube to the disk member, an outer jacket provided with closure plugs exteriorly threaded, a ring member interiorly threaded for engagement with the plug and the outer periphery of the ring in engagement with the outer jacket to provide means for sealing the end thereof in conjunction with a clamp.

18. Foote, 1,240,433, Sept. 18, 1917. An airbag used as a vulcanizing tool for tire casings comprises a non-collapsible cylindrical member closed at both ends and made up of fabric layers and rubber, a valve stem connected through one end, and means fastened intermediate the fabric layers of the cylindrical member by which the latter may be conveniently removed from an open-bellied casing.

19. Dykes, 1,276,041, Aug. 20, 1918. An expansible mandrel consists of a plurality of sections of a shape adapted for the interior of the tire, expanding mechanism in the mandrel so that it may be uniformly expanded for use, and devices to operate the entire mechanism from a single point outside of the tire, the mechanism comprising a threaded rod having toggle-joint connections with the sections of the mandrel, inwardly projecting guides on the inner surfaces of the sections, and means on the rod to engage the guides and thereby prevent endwise displacement of the rod, the devices being supported to move with one of the sleeves when the mechanism is operated.

20. Hirsch, 1,276,654, Aug. 20, 1918. An expanding core comprises a plurality of arcuate members, a plurality of blocks, each having a cam action with the members, an arcuate rod connecting the blocks together, a link pivotally connected to one end of the rod, and a screw having a screw threaded engagement with one of the members and a ball and socket connection with the link.

21. Johnson, 1,319,088, Oct. 21, 1919. An airbag for tire repairing purposes consists of flexible material and of complete circular shape in cross-section, and having a curved member outside in contact throughout its area with its concave side to prevent its assuming an angular shape between the mold clamps during vulcanization.

22. Lookholter, 1,326,675, Dec. 30, 1919. An arc-shaped core comprises opposite expansible sides, intermediate springs adapted to influence the sides to move in opposite directions, extensions projecting from the sides, and means for retaining the extensions against the influence of the springs.

23. Alsten, 1,327,264, Jan. 6, 1920. A pneumatic vulcanizing core formed of non-expansible but flexible material and provided with a groove or depression, when deflated, capable of straightening out in a transverse direction to increase the diameter of the bag when inflated, and a core normally lying in the groove, but separate from the bag.

24. Powell, 1,329,208, Jan. 27, 1920. A tube for repairing tires has an elongated opening along one side, and means comprising interfitting loops secured to the tube on opposite sides of the opening for closing it.

25. Smith, 1,335,353, Mar. 30, 1920. An airbag for use in vulcanizing tires has a flexible bag with one of its integral ends intact while its other end is cut off to leave the bag open, a rigid ring within and secured to this open end, the bag being free of projections on the outer surface thereof, a cover plate detachably secured to and located outside the ring and the airbag, another bag detachably arranged within the first-named bag and closed at both ends, and an inflating tube extending from the inner airbag and through the opening in the cover.

26. Johnson and Alsten, 1,337,707, Apr. 20, 1920. A core used in repairing tires comprises an inner tube of flexible and expansible material, and an outer bag expansible circumferentially, but not longitudinally, and a loop secured at one end of the outer bag for drawing it along the mold.

27. Holm, 1,337,910, Apr. 20, 1920. An expansible core for use in vulcanizing tire casings comprises a main arcuate member, members disposed through and in threaded engagement with the opposite end portion of the main member, a shoe overlying the outer portion of the main member, and with which the second-named members are in swivel engagement, a padding of yielding material surrounding the main member and the shoe, and a second shoe overlying the inner portion of the main member and separate therefrom.

28. Peterson and Brancel, 1,344,313, June 22, 1920. An expander comprises a solid soft rubber core with clamping heads applied to its ends and a rod extended axially through the core, attached to one of the clamping heads extended freely through the other head, and a tension device applied to the latter and to the adjacent projecting end of the rod and operative thereon to compress the core endwise and thereby radially expand it.

29. Dieser, 1,353,383, Sept. 21, 1920. A vulcanizing pad comprises a flexible casing formed of an inner lining of vulcanized rubber, an intermediate layer of fabric, and an outer layer of a heat insulating material, the layers being vulcanized to form a wall for the casing, having a granular filling and means for retaining it.

30. Huetter, 1,365,104, Jan. 11, 1921. A vulcanizing core comprises a metallic shell formed with flexible walls having means to permit its expansion, and means to introduce fluid pressure within the shell.

31. Dolph, 1,379,397, May 24, 1921. A vulcanizing airbag has a flexible bag, a member held therein having a passage therethrough and end enlargements forming closures for the bag and also forming an annular chamber around the inner member, and means for circulating steam through this member.

32. Burdette, 1,379,598, May 24, 1921. An airbag of arcuate contour has an expansible body portion and superposed thereon a helically wound strip of fabric provided with uniform alternate wide and narrow portions.

33. Sapp, 1,380,930, June 7, 1921. An airbag comprises a plug encircled by a ferrule, a cap, a separable tube within the bag body, the ends of the bag and the tube being compressible between plug, ferrule, and cap.

34. Gram and Gram, 1,406,640, Feb. 14, 1922. An expansible core for vulcanizing tires has a mass of resilient rubber, clamping heads applied to the ends of the core, a rod extended axially through the mass, secured at one end to one of the heads and passing freely through the other or movable head, its free end being curved laterally out of alinement with the axis of the core and having a screw thread formed thereon, an abutment member through which the curved end passes and which engages the movable head, and a nut threaded on the end engaging the abutment member. *(To be concluded)*

The Rubber Control Scheme at Work[1]

Everett G. Holt

WHEN a rubber producers' agreement preliminary to the Intergovernment Agreement now in force was made public on April 28, 1934, it was remarked in British financial circles that the negotiators should be congratulated on having devised an agreement that, unlike the discarded Stevenson Restriction Scheme, covered almost the total world production and had the further attribute of flexibility. Experience under the Stevenson Scheme had clearly shown the dangers of too much rigidity. The broad powers of the International Rubber Regulation Committee include authority to establish and to change the restriction percentage—in fact the responsibility for doing whatever is required at a given moment in the interest of "reducing existing world stocks to a normal figure and adjusting in an orderly manner supply to demand and maintaining a fair and equitable price level which will be reasonably remunerative to efficient producers."

The objective, thus described in the preamble to the agreement, is obviously and perhaps dangerously vague, even for a scheme meant to admit of much internal adjustment. "Normal world stocks," "a fair and equitable price" and "efficient producer" are terms still undefined, and on this score criticism has not been wanting, fostered somewhat by the expectations of benefits voiced by producers. In some quarters, too, there still prevails a skeptical view of this scheme as unwise in method, involving unequal application (partial also, perhaps) and an intricate system of basic production quotas, export percentages, export licenses, export duties, limiting of acreage, limiting of stocks and minor regulatory devices. The scheme is, however, generally approved by leading rubber producing companies, a typical moderate view being that, if the International Committee exercises its powers judiciously and with moderation, it should be able to guarantee a steady price for rubber, at a level encouraging its maximum use and offering a fair return to labor and capital engaged in its production.

Shortly after the representatives of the participating

[1] Reprinted from *Asia*, July, 1935, pp. 422-27. This, the second of two articles on rubber restriction, analyzes the effect, thus far, of the Intergovernment Rubber Agreement on production and prices. The experiment is a significant step in international commodity control.

U. S. Rubber Products, Inc.

The Washing of the Collecting Pails, on the Large Plantations, Marks the End of the Morning's Work. After an Hour for Lunch, the Workers Go to Their Afternoon Task of Weeding

governments had signed the Intergovernment Agreement as a treaty, on May 7, 1934, one distinguished skeptic, Sir Cecil Clementi, Governor General of Malaya, whose doubting support of rubber restriction was discussed in the article entitled "How International Rubber Restriction Came About,"[2] declared himself to be fearful lest the plantations might "genuinely restrict their output while native grown rubber might even increase in tonnage" because of a rising price. Though Sir Eric Geddes, chairman of the Dunlop Rubber Co., one of the leading rubber manufacturers of the world and also, through its plantation holdings, one of the leading producing companies, had expressed similar doubts, Sir Cecil, because of his office, found himself severely criticized by planting interests. Before June 30, his resignation, tendered to the Colonial Office on grounds of ill health, was accepted, and, likewise before June 30, the appointment of his successor was announced.

Meanwhile the governments whose representatives had signed the Intergovernment Agreement were busy to good purpose with the enactment of laws to make restriction effective in the territories concerned. In mid-September, however, their hopes for complete and speedy success were somewhat tempered when they were apprised of the refusal of the Siamese Legislature to ratify the agreement; the resignation of the Cabinet soon afterward and then the absence, followed by the abdication, of the King made the situation a continuing embarrassment. The Legislature felt that the country might be able to produce as much as 40,000 tons of rubber annually by 1938 and that the basic quota of 15,000 tons was far too low. This sentiment was strengthened no doubt by the concessions obtained for Indo-China by France. It was regarded as unfortunate that Siam should be outside the agreement; for, though it is not particularly important as a rubber-producing country, its situation with reference to British Malaya and Burma would make it a convenient region for smuggling activities. After long negotiations, the basic quota of Siam was just recently agreed upon at 40,000 tons. Whether this gives other parties to the agreement a precedent for scrutinizing the equitableness of production quotas remains to be seen. India, whose representative had signed the agreement with reservations, ratified it and enacted the necessary laws in August, but in November, after Siam's refusal to ratify was known, the Indian Rubber Licensing Committee asked that the basic quotas should be revised and increased. The increase requested was not large—from 6,850 to 11,000 tons in 1934, and from 9,250 to 13,000 tons in 1938—but, if granted, it might call forth similar requests from other quarters.

The basic quotas set for the various regions in the producers' agreement of April 28, 1934, were determined with reference to the *status quo* in a period of depression rather than on equities. The quotas, as stated in long tons, for the first and the last year—1934 and 1938—of the 4½-year plan, are as follows: Malaya, 504,000 and 602,000; Netherlands India, 352,000 and 485,000; Ceylon, 77,500 and 82,500; India, 6,850 and 9,250; Burma, 5,150 and 9,250; North Borneo, 12,000 and 16,500; Sarawak, 24,000 and 32,000; Siam, originally 15,000 and 15,000, but subsequently raised to 40,000 for years subsequent to 1934. In the light of recent annual export statistics for India and Siam, their original basic quotas may have looked ample; but, irrespective of the proper ratio between production and production capacity, figures for production capacity undoubtedly do require constant revision and always involve some guesswork. Whether an acre of mature planted rubber will produce annually 150 pounds or 1,500 pounds depends on the quality of stock, the age of the trees, the character of the soil, the methods of cultivation employed and other inconstant factors. Of the planted acreage in the more remote Asian regions, especially the gardens of native small holders, there is not much accurate knowledge. In fact, close estimates of production capacity for a whole country can be made only with respect to large and European-type plantations.

The fixing of permissible export percentages of the basic production quotas is the chief task devolving upon the International Rubber Regulation Committee. This committee is composed of four members and two substitute members from Malaya, three members and two substitute members from Netherlands India, two members and one substitute member from Ceylon, from India and Burma together one member and one substitute member, and from Indo-China, North Borneo, Sarawak, and Siam one member and one substitute member each—fourteen members and ten substitute members in all. The delegation from each country must vote as a unit and is allowed one vote for every complete 1,000 tons of the basic quota for the control year. Indo-China has no voting power in fixing export percentages except in the event, which is improbable, that it exports more rubber than is imported into France. In all matters other than fixing export percentages Indo-China has voting power, and a majority of votes suffices for a decision, except that for continuation of the present agreement after 1938 consent of all parties must be secured. On the other hand, the Dutch delegation can constantly control the permissible export percentage, since a three-fourths majority of the total votes is necessary for fixing that percentage.

It was agreed that, for the remaining seven months of 1934 after the agreement went into effect, the permissible export percentage should apply against seven-twelfths of the 1934 basic production quota for each country. For Siam (originally) the minimum permissible export percentage was not to be less than 50% of the basic quota in 1934, and in 1935, 1936, 1937, and 1938 the percentages were not to be less than 75, 85, 90, and 100, respectively; these conditions are effective under the recent adjustment, beginning July 1, 1935. The uniform permissible export percentages decreed for all parties to the agreement except Siam, up to March, 1935, were: June-July, 1934, 100%; August-September, 90%; October-November, 80%; December, 70%; January-February-March, 1935, 75%.

In return for nominal adherence to restriction in Indo-China the French had received concessions that were irritating to some European producers as well as, perhaps, to Siam and India. Sir Eric Geddes, for example, in enumerating his objections to the Intergovernment Agreement, stated that the scheme was not equitable among producing countries, Indo-China in particular having received terms out of all proportion to its production capacity; while Liberia and Brazil are not included at all. Sir Eric probably had in mind the fact that certain manufacturing competitors of Dunlop which operate plantations (Michelin in Indo-China and Firestone in Liberia) will suffer practically no embarrassment on account of the agreement and may even greatly benefit by it.

It is true that France, which, as a party to the agreement, is immediately concerned, enjoys special privileges incidental to the present underdeveloped state of rubber production in Indo-China. Rubber production in Indo-China is, in fact, subsidized by the French government. Since the French have in recent years imported about three times as much rubber as Indo-China produces, they

[2] India Rubber World, Sept. 1, 1935, pp. 39-41; Oct. 1, 1935, pp. 37-38.

T. W. Campbell

The Tractor of Ceylon—a Trained Elephant—Is Used for the Clearing of Jungles for New Plantations. In the Background Are Young Rubber Trees, Which Will Produce in Seven Years

tax the imports and apply the funds to a planters' subsidy. With the subsidy in force exports of rubber from Indo-China increased from the 1931 figure of 12,000 tons to 14,376 tons in 1932 and 18,394 tons in 1933. But the complicated provisions of the agreement leave Indo-China really free of restriction unless exports exceed 30,000 tons in a year, and in trade circles it is thought to be improbable that exports will amount to so much—at least before 1938. Indo-China, furthermore, is not specifically excluded from a provision that, if a territory exports less than its permissible amount, it is allowed to make up the difference during the next year, provided that difference does not exceed 12% of the amount permissible in the year when export did not equal the quota. However Indo-China has no specific basic quota and hence no permissible exportable allowance.

Among other provisions in the agreement, generally applicable except, in a few instances, to Siam or to Siam and Sarawak, are those that take care of the difficulties of making shipments accord exactly with allowances, new planting, replanting, accumulation of stocks, export taxes, taxes to aid research and propaganda, certificates of origin, prevention of smuggling and so forth. Though of importance to planters, dealers, and administrators, these are at present minor matters. New planting limitations, in future effect, are expected by producing interests to be of major importance.

(To be concluded)

Rubber Shoe Cementing

(Continued from page 42)

joints. After rubber plastics have aged they must be freshened with a penetrating cement to provide a new sticky surface. Occasionally they are coated with a material which builds up the thickness as well as freshens the aged surface at the same time. Parts made and assembled from dry materials never give dependable results.

Rubber cements must be carefully and uniformly prepared from day to day, and materials must be clean and as fresh as possible before cement is applied. Sufficient drying periods must elapse in order to evaporate the solvents before the parts are applied to one another. Many parts in rubber shoemaking are stretched in being formed about the shoe last and readily pull apart if not firmly fastened; also a certain amount of inherent elasticity even in uncured gum also tends to pull the joints apart if the materials have been deformed from their original shapes during the process.

Fortunately for the maker of rubber footwear and the consumer, rubber cement, properly graded to its tasks, applied with caution, and sufficiently dried before lamination, has proved to be a very satisfactory material with which to fuse the fabric and rubber plastics used in the construction of rubber footwear.

EDITORIALS

The Rubber Business Problem

FUNDAMENTALLY the only excuse for the existence of any business enterprise is that of affording a means of adequate livelihood to human beings. An industry that will arrange to establish and regulate its policies with this simple objective constantly in mind will automatically provide for a justifiable return to those persons supplying the necessary business capital as well as that vast and important group of persons who furnish the equally indispensable mental and physical effort.

Any fair opinion of NRA must credit its sponsors with an appreciation of this fact, also with the good intentions of bringing about this desirable condition by establishing a code to standardize the business conduct of each and every member of an industry. It failed because, among other things, it stipulated a movement whereby labor was encouraged to wrest its due from capital under the militant and promotional leadership of the A. F. L.

One lesson that NRA sought to teach, of especial pertinency to the rubber industry, was the value of price regulation that would permit merchandising rubber products on a basis to assure a fair return to both capital and labor. The recent reversion to rather acute price cutting practices would seem to indicate that the point had been lost entirely. The urge for volume recurrently overshadows the fundamental objective of business to the detriment of the rubber industry as a whole and to the individual members as well, thus perpetuating rather than dissipating discontent, discord, and chaos.

F. A. Seiberling, speaking at the annual dinner of the R.M.A., January 6, 1930, pictured the praiseworthy development of the rubber industry during the previous thirty years, then in pointed terms, the truth of which still rings in our ears, depicted the tragic results to investors and to workers of the "every man for himself" type of profitless merchandising battle that characterized the industry's lack of coordinated distribution leadership.

The present-day difficulties were recently characterized by Colonel Charles E. Speaks, who said, "Merchandising practices in the rubber industry have not advanced in proportion to the progress shown in the science of manufacturing."

Is it not perfectly clear that the major problems of the rubber industry in 1920, in 1930, and in 1932 are one and the same? Is it not clear that the problem of today still remains the same and stands as completely unsolved as before regardless of the years that have passed? Certainly this condition is not traceable to any lack of high-order intelligence within the industry, but likely due to the absence of some neutral agency suitably equipped and empowered to formulate, install, and enforce a code of rules designed for the best interests of the industry as a whole. Surely the R.M.A. could be constituted and authorized for such an undertaking.

Rubber Trade Inquiries

WITH the constant expansion of the application of rubber to various uses it is perhaps only natural to expect that each month finds its new crop of persons turning a portion or all of their attention to some phase of commercial interests involving rubber, with which they are totally unfamiliar. It is likewise but logical to expect that of those already engaged in certain rubber pursuits some are currently becoming interested in additional phases, of which they, too, have had no previous knowledge.

Many such persons begin their search for information regarding the phase of rubber to which their interest is turning by contacting with INDIA RUBBER WORLD, where reference files and a rubber library have been carefully maintained since the publication was founded by Henry C. Pearson nearly a half century ago.

It will no doubt be surprising to many of our readers to realize that hundreds of inquiries are received and answered here each month and that a substantial number of them are of commercial importance to rubber product, ingredient, and equipment manufacturers and suppliers, and to our knowledge they frequently result in very desirable new business connections.

Each month the inquiries of this type are listed under the caption "Rubber Trade Inquiries" [1] in this magazine. They are published solely for whatever benefit they may bring to you, and we will always be glad to supply the inquirer's name and address at your request. Reading this department regularly may prove to be a very profitable habit.

[1] See page 86.

D C McPherrin

EDITOR

What the Rubber Chemists Are Doing

A. C. S. Rubber Division Meetings

THE Rubber Division, A. C. S., fall meeting was held at the Mayflower Hotel, Akron, O., September 30 and October 1, 1935. More than four hundred members and guests were in registered attendance. Papers[1] of decided interest were presented Monday afternoon as follows: "AXF—A New Plastic Material," S. D. Shinkle, A. E. Brooks, and G. H. Cady; "Oxygen Absorbers and Their Effect in Rubber," A. A. Somerville; "Effect of Different Temperatures and Oxygen Pressures on Rate of Aging of Soft Vulcanized Rubber," J. H. Ingmanson and A. R. Kemp; "Notes on the Determination of Sulphur in Rubber Compounding," C. Herbert Lindsly; and "A Rapid and Practical Method for the Determination of Free Sulphur in Rubber," E. W. Oldham, L. M. Baker, and M. W. Craytor. Longer than scheduled discussions necessitated carrying the paper of J. H. Dillon, "An Impact Cutting Test for Tire Tread Stocks," over to the Tuesday session.

Other papers given in that morning session were: "The Determination of Guanidines in Rubber Stocks and the Consumption of Guanidines during Cure," Bingham J. Humphrey; "Diffusion of Water through Rubber, Synthetic Resin, and Other High Polymeric Materials," R. L. Taylor, D. B. Hermann, and A. R. Kemp; and "Raman Spectra of Rubber and Some Related Hydrocarbons," S. D. Gehman and H. J. Osterhof.

Harold Gray, chairman of the Crude Rubber Committee organized at the last meeting in New York, April 23, 1935, gave a status report of activities to date. Three meetings of the committee have been held: the first, April 23 in New York; the second, April 27 in Akron; and the third, September 29 in Akron. Communication has been established with various producers' associations in the Far East to familiarize them with the function of the committee and to establish a basis of cooperation. Beyond this work, which of necessity requires much time, the committee has considered a variety of test formulae being currently used and studied the results obtained. Plans were made to confine studies to No. 1 smoked sheets, using a tentative recipe similar to that used by the London Advisory Committee. Mr. Gray invited all laboratories that would care to cooperate to make tests according to the standard practice that he described and submit the results to him at the B. F. Goodrich Co., Akron, for tabulation and study by the committee. He also expressed the committee's appreciation of the help and suggestions given by men in the trade and its desire for such assistance in the future.

Many of the visiting chemists were keenly interested in the plant trips to Anaconda Zinc Oxide Co., the Firestone and Goodyear tire manufacturing divisions, and the Goodrich processing and mechanical departments.

The festive feature of the rubber chemists assemblage was the banquet held Monday night, September 30, in the ballroom of the Mayflower. The fine dinner and vaudeville show of well-chosen talent were thoroughly enjoyed by some 450 guests. All present were recipients of a great variety of useful souvenirs and many drew valuable prizes. The donors were: E. I. du Pont de Nemours & Co., Inc., R. T. Vanderbilt Co., Dow Chemical Co., New Jersey Zinc Co., Wishnick-Tumpeer, Inc., General Atlas Carbon Co., Godfrey L. Cabot, V. L. Smithers Co., American Cyanamid & Chemical Corp., Binney & Smith Co., Rubber Service Laboratories, Ohio Boxboard Co., Henry L. Scott Co., Akron Chemical Co., Anaconda Zinc Oxide Co., Muehlstein Co., United Carbon Co., C. P. Hall Co., American Zinc Sales Co., F. F. Myers Co., and Superior Zinc Co.

The committees responsible for the well-conducted arrangements follow: General Committee on Local Arrangements: A. A. Brill, G. L. Allison, A. W. Carpenter, H. I. Cramer; Registration: G. L. Allison, C. B. Moore, W. W. Vogt, H. F. Palmer; Banquet: V. L. Smithers, Enos Baker, H. P. Protheroe, B. S. Taylor, J. N. Street; Trips and Transportation: E. C. Zimmerman, C. W. Sanderson, Grant Duncan, A. B. Merrill; Publicity: C. P. Hall, L. B. Sebrell, N. A. Shepard, H. L. Trumbull, E. H. Nahm; Ladies Entertainment: Mrs. R. P. Dinsmore, Mrs. N. A. Shepard, Mrs. E. Blaker, Mrs. J. P. Maider, Mrs. H. A. Hoffman, Mrs. G. L. Allison.

At the business session immediately following the report of the Crude Rubber Committee, officers were elected for the coming year. They were Norman A. Shepard, technical director of Firestone, chairman; H. L. Trumbull, chemical research division of Goodrich, vice chairman; C. W. Christensen, Rubber Service Laboratories, reelected secretary-treasurer; and L. W. Brock, C. P. Hall Co., reelected sergeant-at-arms. Departure from the usual custom of having the vice chairman automatically become chairman was necessitated by H. E. Simmons, president of Akron University, asking to be relieved because of the pressure of University duties.

The following executive committee was named: A. A. Somerville, R. T. Vanderbilt Co., O. M. Hayden, E. I. du Pont de Nemours & Co., Inc., A. R. Kemp, Bell Telephone Laboratories, W. W. Vogt, Goodyear Tire & Rubber Co., and S. M. Cadwell, United States Rubber Co.

[1]Abstracts of all papers appeared in INDIA RUBBER WORLD, Oct. 1, 1935, pp. 47-48.

New York Group

THE regular fall meeting of the New York Group of the Rubber Division, A. C. S., was held October 11, 1935, in the clubrooms of Building Trades Employers' Association, Two Park Ave., New York, N. Y. Approximately 200 attended the dinner at 6:30 p. m. and the meeting that followed, which consisted of the presentation of two instructive papers.

The first, "Unusual Uses of Rubber," was by Carl Zieme, former technical superintendent, now sales engineer of the Republic Rubber Co., Youngstown, O. Mr. Zieme's talk covered, with projected illustrations, many of the unusual or unknown, yet very important uses of various types of mechanical rubber products. The array of pictures was of added interest out of the fact that they were the direct result of the speaker's pet hobby, amateur photography. (See illustration on page 51.)

The second paper, as abstracted below, deals with "Methods of Plasticizing Rubber," by Ira Williams and C. C. Smith, Jackson Laboratories, E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.

Abstract

It is possible that rubber is a colloidal material consisting essentially of a single phase composed of two types of mutually soluble components, one of which is more highly attacked by oxygen than the other. If rubber is an association colloid in which the structure is due to the state of aggregation, a change in the attraction between the units could result in either increased or decreased mobility.

Many substituted hydrazines act on rubber to cause a marked degree of softening or on rubber sols to cause a great decrease in viscosity. By suitable selection a range of activity can be secured comparable with that to be found among accelerators of vulcanization.

Three possible methods are suggested by which phenyl hydrazine could increase the mobility of rubber.

1. The hydrazine may react chemically to assist the destruction of a carbon carbon bond in the rubber molecule. The rupture of a carbon bond depends upon the action of oxygen assisted in some manner by the hydrazine. Phenyl hydrazine does not act only as an oxygen carrier because sol rubber will peptize in the absence of free oxygen.

2. The hydrazine may react chemically without the rupture of a carbon bond in such a manner that the attraction between molecules of rubber is decreased. Hydrazines may act to vary the forces between molecules of an associated group. Such a mechanism could assist in the final separation of rubber molecules into a more nearly true solution and account for the increased mobility of massive rubber. This action also must involve oxygen and may involve chemical action of the hydrazine. If the forces of intermolecular association are centered largely in the double bonds, it can be understood that the addition of oxygen would reduce the attraction. It is improbable that the hydrazines act simply as reducing agents since such reducing agents as hydrogen iodide or moderately catalytic hydrogenation have much less effect on the mobility of rubber.

3. The hydrazine may act purely in a physical manner to decrease the intermolecular forces in the rubber. Such physical effects are found in the stiffening action of such substances as tetraphenyl-hydrazine or hydrazo-benzene. Such an explanation of the softening action is, however, weakened by the inability to remove the hydrazine and return the rubber to its original stiffness.

It is probable that the increase in mobility is brought about by chemical activity of the hydrazine. Such a process would not be reversible. Whether the carbon chain is broken or not, the presence of either the hydrazine or its reaction products serves materially to decrease the attraction between the rubber molecules.

Executive Committee

At a meeting of the executive committee it was decided that the offices of vice chairman and sergeant-at-arms would be established next year to conform to the official policy of the Rubber Division.

Chicago Group

ON OCTOBER 25 the Chicago Group, Rubber Division, A. C. S., held a joint meeting with the Chicago Section, A. C. S., and over 750 chemists in the Midwest attended this outstanding chemical meeting at the Stevens Hotel. Dinner was served in the Boulevard Room, and owing to the unusually large attendance the technical meeting was held in the North Ballroom.

Arthur Guillaudeu, chairman of the Chicago Section, introduced Carl E. Frick, chairman of the Chicago Group for this meeting, who presented the speaker, Norman A. Shepherd, director of chemical research, Firestone Tire & Rubber Co., Akron, O. Dr. Shepherd's paper, "The Onward March of Rubber," received with great interest by all those present, described the chemicals and processes generally used in the rubber industry today and covered vulcanizing agents, reclaimed rubber, acidic compounding ingredients, organic accelerators, reenforcing powders, and antioxidants.

Dr. Shepherd's paper particularly emphasized the chemical structure of the various antioxidants must generally used. He further discussed new substitutes or so-called synthetic rubbers and latex. In his short talk on latex the speaker mentioned the manufacture of products through a very new process in which latex heat sensitized with certain inorganic salts gives deposits on heated forms as thick as 1/10-inch with a twenty-two-dip. This demonstration made by Dr. Shepherd before the audience was very successful. Dr. Shepherd also mentioned synthetic products from rubber such as the so-called "polycycle-rubbers," chlorinated rubbers, and hydrochlorinated rubbers.

His closing remarks described the Firestone tire made for experimental purposes without any rubber or cotton. The rubber was replaced by DuPrene, and the cotton by rayon made from wood pulp. He described that this tire was not practical at present, but merely an indication of the progress of rubber technique and the marvelous development work in rubber chemistry. Through the use of Dr. Shepherd's own public address system all present and those in the overflow in the corridor outside the room were able to hear every word with ease. After his address the members were able to examine over 150 samples of rubber chemicals, compounded rubber, and various rubber articles manufactured by various processes.

Boston Group

THE fall meeting of the Boston Group, Rubber Division, A. C. S., will be held at the University Club on November 19. An interesting program is in preparation.

Future Meetings

THE A. C. S. lists its future meetings as follows: ninety-first, Kansas City, Mo., April 13 to 17, 1936; ninety-second, Pittsburgh, Pa., Fall of 1936; ninety-third, Chapel Hill, N. C., Spring of 1937; and ninety-fourth, Rochester, N. Y., Fall of 1937.

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DETERMINATION OF CONCENTRATION OF SULPHUR CHLORIDE FOR VULCANIZING BATHS. A. Hutin, *Rev. gén. caoutchouc*, 11, 104 (1934); *Chem. Zentr.*, i, 971 (1935).

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SYNTHETIC RUBBER AND THE CREATION OF A SYNTHETIC RUBBER INDUSTRY IN THE U.S.S.R. S. V. Lebedev, *Sotz. Rekonstr. Nauk.*, 3, 1, 127-36 (1933).

ACETONE EXTRACTION OF RAW RUBBER. I. Effect of Time of Heating of the Alcohol Solution on the Determination of the Acid Value of Raw Rubber and Its Acetone Extract. II. Influence of heating at 100° and Storing of the Acetone Extract on the Acid Value. H. Endoh, *J.Soc. Chem. Ind.*, (*Japan*), 38, 280-281 B, 281-284 B (1935).

METHODS OF INCREASING THE OUTPUT AND ECONOMY OF MIXING MILLS. *Gummi-Ztg.*, Aug. 2, 1935, pp. 770-72.

MANUFACTURE OF RUBBERIZED HOSE. *Gummi-Ztg.*, Aug. 9, 1935, pp. 798-99.

TECHNICAL EVALUATION OF RAW RUBBER IN THE RUBBER FACTORY. R. C. Riebl, *Kautschuk*, Aug., 1935, pp. 147-50; Sept., pp. 164-67.

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(*Continued on page* 52)

The Raman Spectrum of Rubber

S. D. Gehman[1]

THE Indian physicist, Raman, discovered in 1928 that when a liquid is illuminated with a beam of monochromatic light, that is, light containing one frequency of vibration, and the light scattered by the liquid in a direction at right angles to the beam is examined with a spectrograph, a line spectrum is obtained which contains frequencies characteristic for the liquid. The effect also exists for gases and solids.

The spectrum of the scattered light is known as a Raman spectrum. The Raman spectrum lines arise from the modification of the incident frequency due to the vibrations of the molecules of the material illuminated. This modification takes place in such a way that regardless of what illuminating frequency or color is used, the differences in frequency between it and the Raman lines are the same for any one material. The difference in frequency of vibration between the illuminating beam and a Raman spectrum line in the scattered light can be looked upon as a natural frequency of the molecule. The frequency of vibration in a molecule depends upon the masses of the vibrating atoms or groups of atoms and the strength of the elastic force, analogous to a system of heavy balls connected by short, stiff spiral springs. The incident light serves to set the molecules into vibration with their natural periods.

It has been found that various types of primary organic chemical linkages are associated with definite Raman frequencies which are sometimes remarkably constant in an organic series. The study of the Raman spectrum of organic compounds has been very extensive and has given information on many problems of chemical constitution and structure.

A technique has now been developed for eliciting the Raman spectrum of rubber. The method will give a means of studying the chemical linkages in rubber and some of its derivatives. For a more complete discussion of the nature and use of Raman spectra, an article by Andrews in the November, 1931, issue of *Industrial and Engineering Chemistry* may be consulted.

[1] Research Laboratories, Goodyear Tire & Rubber Co., Akron, O.

Some Unusual Uses of Rubber Photographed by Carl Zieme[1]

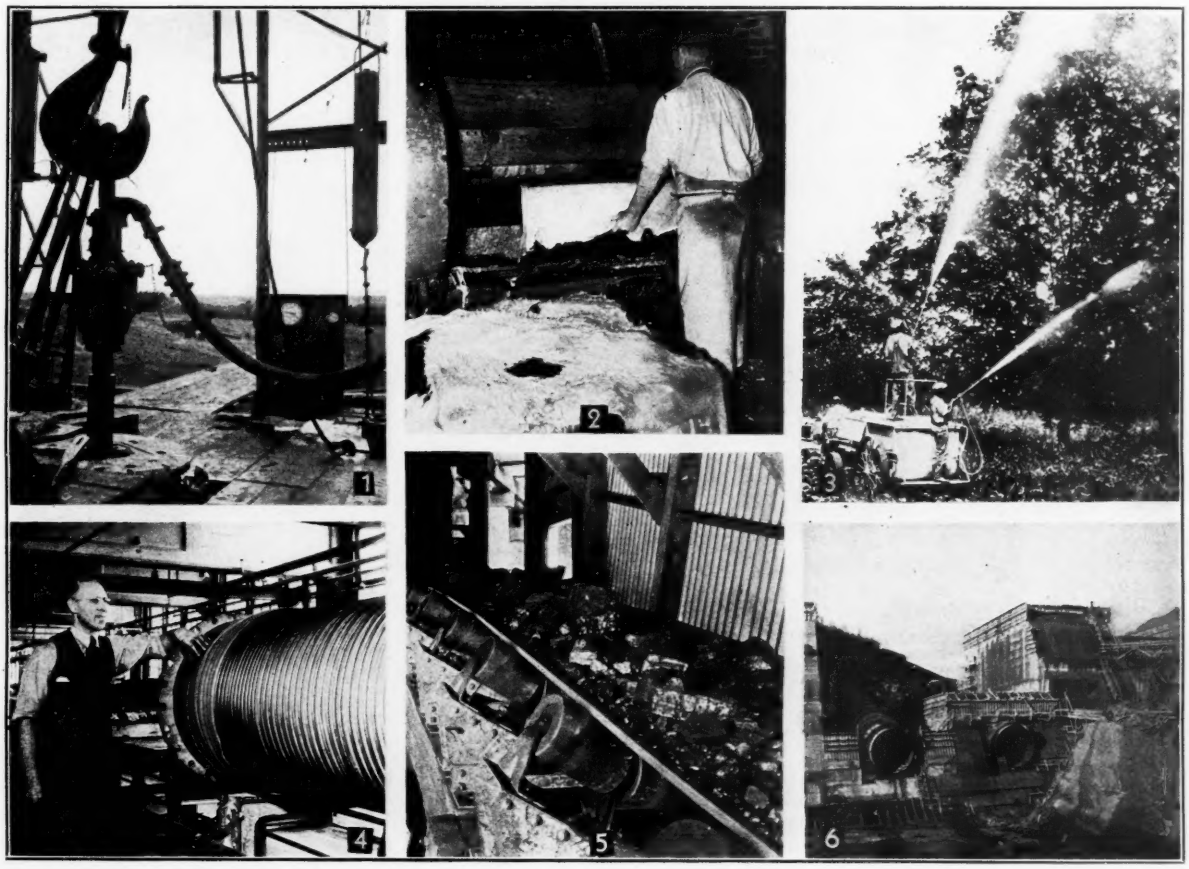

Fig. 1. Rubber Metal Reenforced Rotary Hose in Deep Oil Well Drilling—the Hose Is the Flexible Link in the Circulating System through Which Mud Is Pumped to the Bottom of the Hole to Remove the Drill Cuttings—Surge Pressures Exceeding 5,000 Pounds Are Often Encountered. Fig. 2. An Application of Rubber in the Leather Industry Where Rolls of Various Types Are Used in Tanning—Illustrating the Preparation of Hides Prior to Tanning. Fig. 3. Rubber Finds an Extensive Application in the Fruit Growing Industry in the Use of Hose for Spraying. Fig. 4. Flexible Connection on One of the Largest Dredges in the World on a Mississippi River Dredging Project—Consists of a Heavy Abrasion Resisting Tube Rubberized Fabric Reenforced with Two Internal Spirals of Oil Tempered Wire—Illustration Shows Hose in Course of Construction with the Exterior Layer of Wire Exposed—Length 15 Feet; Weight, 2,500 Pounds. Fig. 5. A Rubber Covered Conveyer Belt Extensively Used in Transporting Bituminous Coal. Fig. 6. Mechanical Rubber Products Have Played an Important Part in Speeding Up Government Projects—T.V.A. Norris Dam in Course of Construction Showing Penstocks at Site of Power House.

[1] See New York Group, p. 49.

Editor's Book Table[1]

BOOK REVIEWS

"My World Trip—1934-35." Dr. E. A. Hauser. *Gummi und Asbestzeitung,* Vienna, Austria. Paper, 97 pages, 6 by 9 inches. Illustrated.

This account by the author of his recent trip is given in three languages, English, French, and German, bound together. It is, therefore, only a third of the length indicated by the paging. The story, told in three chapters: namely, the United States of America, Japan and China, Malaya and Ceylon, presents first-hand impressions of the rubber industry as it is today. The account of its progress in Japan is of very vital interest to rubber manufacturers of Europe and America who are signally failing to meet the competition based on the Japanese economic and social factors peculiar to that country and its mode of life.

In the chapter on Malaya and Ceylon the author deals with the restriction scheme, which, in its present form, he likens to "life insurance for old plantations which would die out if things were allowed to take their natural course."

Copies of this booklet at $1 each can be procured from India Rubber World.

"Brake Linings." The Brake Library, Volume I. First Edition. 1935. T. R. Stenberg, Firestone Park Station, Akron, O. Paper, 91 pages, 8½ by 11 inches. Indexed. Illustrated with 101 figures. Sold by India Rubber World at $2 each.

This book is intended to serve as a source of information on brake linings, gathered by research and from experience. The material is arranged to present answers to all questions about brake lining in simple and understandable language.

The topics considered are: Brief History of Braking and Brake Lining, Woven Linings, Impregnating or Binder Materials, Rubber Compounds, Molded Fabric Linings, Molded or Bonded Fiber Linings, Friction Blocks, Testing of Brake Lining, Selection of Linings, and Brake Lining Failures and Troubles.

The brief and concise treatment of every topic covered and the thorough indexing of each combine to make the book a handy and dependable guide for the practical man and machinist interested in the construction and testing of brakes.

Tentative titles for forthcoming volumes in this series follow: "Brake Action and Testing," "Brakes and Brake Drums," "Braking Systems," "Brake Troubles and Correction," "Brake Shop Management," and "Brake Service Merchandising."

"Chemical Engineering Catalog." Twentieth Annual Edition, 1935. Published by Reinhold Publishing Corp., 330 W. 42nd St., New York, N. Y. Cloth, 863 pages, 9 by 12 inches. Illustrated. Index.

The latest edition of this standard reference work contains authoritative information regarding the products of several hundred concerns manufacturing engineering equipment and supplies for chemical and related industries including rubber. The volume comprises the following sections: Alphabetical Index, Trade Name Index, Equipment and Supplies Classified and Catalog Index, Classified Index of Industrial, Laboratory, and Reagent Index, Manufacturers Catalogs, and Technical and Scientific Book Section.

"A.S.T.M. Standards on Electrical Insulating Materials." Prepared by Committee D-9 on Electrical Insulating Materials. Specifications Methods of Testing. September, 1935. Issued Annually. Published by American Society for Testing Materials, 260 S. Broad St., Philadelphia, Pa. Paper, 311 pages, 6 by 9 inches.

This compilation presents under a single cover A.S.T.M. standards that are in widespread use for testing and evaluating electrical insulating materials. This edition gives twenty-five standardized methods of test and ten specifications. The method of testing shellac has not been published heretofore. During 1935 revisions were made in a number of the test methods including those covering varnishes, solid filling and treating compounds, molding powders, sheet and plate materials, laminated tubes and round rods, natural mica, and flexible varnished tubing.

Specifications which have been revised cover friction tape, rubber insulating tape, and flexible varnished tubing.

The current report of Committee D-9 outlines the extensive research and standardization work under way and gives a modified Baader saponification test for insulating oils and proposed requirements for rubber insulating blankets.

The following materials are also covered by specifications or tests given in the book: rubber gloves, rubber matting, electrical cotton yarns, silk and cotton tapes, pasted mica, and slate, black biascut varnished tape, asbestos yarns, tape, and roving, untreated paper, electrical porcelain, insulating oils. Other tests cover procedures for thickness testing, impact, thermal conductivity, resistivity.

[1] For New Publications, see p. 82.

"The Rubber Industry—1935." A bibliography prepared by P. W. Barker, Department of Commerce, Bureau of Foreign and Domestic Commerce, Washington, D. C. September, 1935. Paper, 20 pages, 8 by 10¼ inches.

This abridged bibliography is not prepared for the scholar, but for the student of the various problems confronting the plantation rubber industry and the rubber manufacturing industry. Needless to say many worthwhile titles have been omitted owing to the requirement of brevity.

"The Chemicraft Rubber Chemistry Manual." By Jermain D. Porter. The Porter Chemical Co., Hagerstown, Md. 1935. Paper, 76 pages, 5 by 8 inches. Illustrated.

This manual is one of a series written to accompany a student chemical outfit of materials and apparatus for the purpose of instructing the novice in some branch of applied chemistry or microscopy. The story of rubber is covered briefly in seven chapters which recount Goodyear's discovery of vulcanization, plantation sources of rubber, the chemistry and utilization of rubber, manufacture of tires, wearing apparel, and various other special articles. The final chapter describes the method by which sulphur is procured and refers to a few of its useful compounds. Fifty-two easy experiments are described in detail and serve to impress the student with the utility of rubber to the needs of modern civilization.

Rubber Bibliography

(*Continued from page* 50)

Cold Vulcanization Method for Attachment of Rubber Soles. G. Kiselev, *Kozh. Obuvn. Prom.,* 13, 454-56 (1934).

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Preparation of the Leather Substitute "Prima." B. Prigoshin, *Kozh. Obuvn. Prom.,* 12, 510-14 (1933).

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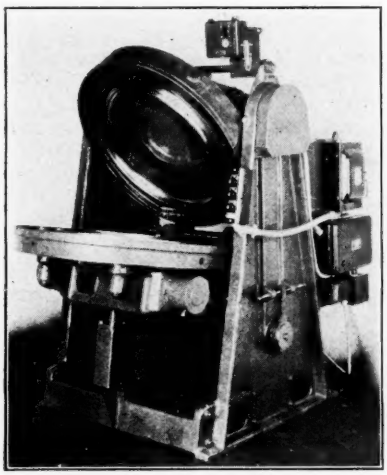
(*Continued on page* 74)

New Machines and Appliances



National Bicycle Tire Vulcanizing Unit

Bicycle Tire Press

THE bicycle tire vulcanizing unit pictured is the latest improved machine for that purpose. It is simple in design, ruggedly built, and electrically operated by a motor. Its features include also single pressure adjustment for mold registration, ease of loading and unloading, accessibility for cleaning, quiet, oiltight screw drive, and a closing time of approximately four seconds. National Rubber Machinery Co., Akron, O.

New Diaphragm Valve

THE importance of the diaphragm valve as the business end of any control system and the need of matching the valve with the controller in precision and performance cannot be over-estimated.

The latest TAG valve development is a new long range throttling top. This construction incorporates several new features of design. Particularly noteworthy is the arrangement for adjusting the spring pressure. The member in contact with the bottom of the spring does not turn when the adjusting feed screw is turned, but guided by the two vertical fins of the spider arms, merely moves up or down. Thus spring adjustment does not tend to wind up the spring or disturb its normal characteristic in any way. C. J. Tagliabue Mfg. Co.

Cross-Type Coupling

THE cross-type coupling pictured meets the demand for an inexpensive flexible coupling for light-duty motor drives where misalinement of connected shafts is unavoidable. It is of the totally enclosed lubricated type, dust- and moisture-proof, simple in construction, and dependable in operation. Because the well-lubricated, evenly loaded large bearing areas remain unchanged under all operating conditions this coupling can be selected on the basis of maximum bore. Each size has ample capacity

TAG Long Range Throttling Top Valve

Waldron Cross-Type Coupling

safely to transmit the load of a motor, the shaft diameter of which is within the maximum bore of the coupling. The alinement may be checked without disturbing the coupling as the hole in the end of the grease cover is concentric with the hub when the connected shafts are in line. A circular covering this coupling is available from John Waldron Corp., New Brunswick, N. J.

Needle Pyrometer

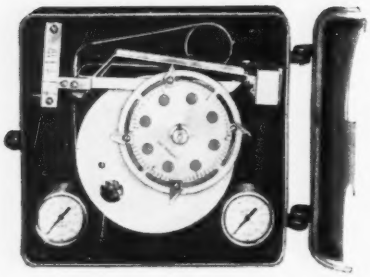
THE needle pyrometer is designed to serve the need in some process industries of an instrument to determine quickly and accurately the temperature of materials in plastic state during certain operations. The illustration shows this device being applied for indicating the temperature of a batch of rubber just discharged from a Banbury mixer, ready for sheeting prior to the cooling process.

This pyrometer is of the thermoelectric type. Its operation depends upon the well-known principle that when two wires of dissimilar metals are joined to form a closed circuit and one junction is heated, a varying electromotive force is set up dependent upon the difference in the temperatures of the hot and the cold junctions. This electromotive force may be indicated upon a millivoltmeter calibrated to read directly in degrees Fahrenheit.

The insertion element of the pyrometer is a sensitive thermocouple housed in a hollow needle of stainless steel, similar to a hypodermic needle. The latter protects the thermocouple and provides the necessary stiffness for insertion into plastic materials. A length of flexible metal protective tubing enclosing the leads connects this element to the indicator, which is provided with a handle.

When the needle pyrometer is used, the insertion element is held in one hand and the indicator in the other. The needle is then thrust into the plastic material and the correct reading is indicated on the scale almost instantly.

Cambridge Needle Pyrometer



Taylor Intermitter

"Lab-Mix" Stirrer

The instrument is equally adapted for taking the temperature of rubber batches under all conditions of working as also of molds and other hot surfaces. Cambridge Instrument Co., Inc., Grand Central Terminal, New York, N. Y.

Laboratory Stirrer

LABORATORY workers will appreciate on sight the well-built and effective mixer, here pictured. It is operated by a shaded pole-type motor and a high-grade rheostat for changing speeds as desired. The device can be used for stirring in titrations, electro-analysis, and syntheses, also for emulsifying, dissolving, dispersing, and extracting. It runs on alternating current only (110 volt, 60 cycle) and will operate 24 hours daily without damage or sparking and it is not injured by vapors. It fits an ordinary clamp holder or may be screwed to a shelf or wall. Its weight is one pound, thirteen ounces. The shaft and the propeller are either chromium or monel as desired. The Chemical Publishing Co. of N. Y., Inc.

Time-Cycle Controller

THE control instrument pictured is limited in its function to the repetition of a single operation. Instead of employing the conventional fixed cam to time the intermittent action of a diaphragm operated valve or device, the Intermitter has a circular cam on which the proper number of actuating lugs may be placed. The number of lugs corresponds to the number of operations to be performed during the rotation of the cam. As many as twenty lugs may be used.

The duration of each operation is adjustable by moving the bracket carrying the nozzle so that its scribe mark is opposite the desired time interval on the scale. The higher the position of the nozzle the shorter the period of its closure and the duration of the operation. Thus control of the number or durations of the operations or the intervals between operations is possible without replacing or cutting the actuating cam.

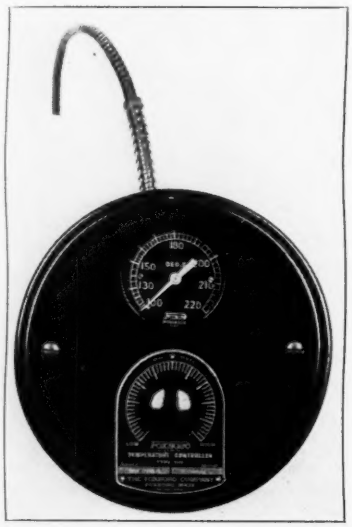
It is possible to operate more than one diaphragm valve or similar device from the same instrument, the number depending upon the operating conditions and the nature of the control required. Taylor Instrument Cos.

Controllers for Platen Mold Presses

TWO new control instruments of almost identical appearance have been introduced for use on mold presses; the one controls temperature, and the other pressure. The dial and knob on the lower face of the controller permit adjustment of the temperature or pressure within the range of the instrument. The indicating gage above the adjusting knob shows the air pressure on the diaphragm motor of the control valve and also shows whether the valve is opening or whether it is closing.

On the temperature controller illustrated a two-inch dial-type thermometer may be installed in place of the air gage. This thermometer is connected to the same bulb as the controller, thus showing the temperature being maintained. The pressure controller may be equipped likewise with a high pressure indicating gage that shows the pressure being controlled. In either case it is necessary to mount a valve motor air gage on the air line to the valve outside the case.

All working parts are integral with or mounted on a cast aluminum base. By removing the set screw in the setting knob and removing the two screws shown on the face of the instrument, the entire case can be removed, leaving the interior open to inspection. The Foxboro Co.



Mold Press Temperature Controller

Vibratory Screen

THE screen pictured has two very important features—the ability to adjust the vibration to suit the material, and a simple method of holding in the cloths and permitting their quick replacement. This screen is of the type which has a vibrator element supported in an inverted U-shaped metal frame. The sieve basket fits into a quick-set clamp which is at the bottom of this frame.

The vibratory motion is obtained through the use of a motor-driven unbalanced weight; it is controlled by adjusting the position of the weight. It may be exactly adjusted to the particular requirements of the material being screened. The motor is hermetically sealed in a dust- and explosion-proof hood and operates on any lighting circuit.

Sieve cloths are fastened in the seamless steel sieve baskets by a unique method. No bolts, screws, or holes in the cloth are required. Flat or cone-shaped sieve disks of metal screen cloth, of the proper mesh, are provided with a steel edging. This disk is laid in the basket, and a sieve lock ring inserted on top. A few turns of a single wing-nut seats the disk. Disks are interchangeable and quickly replaceable. Cotton (cheese) cloth disks may also be used. These are supported by a coarse mesh, steel wire disk, cadmium plated.

Duplex sieve baskets, permitting of an additional separation, may be used. The screen is easily portable. When in operation, it is usually suspended from any convenient support and may be used for any liquid or solid material. Manufactured by Paterson Engineering Co.; distributed by Arthur T. Ward.

Paterson Vibratory Screen

Rubber Industry in America

OHIO

THE rubber industry's business in Ohio continues unchanged with, perhaps, a trend toward greater improvement. Inventories are reduced, and employment also has dropped in some instances. Prices, of course, remain most unsatisfactory to manufacturers. It is expected that with the new year employment will gain and production step up.

Local automobile parts plants are increasing production as car manufacturers introduce their new models. With a shorter than usual period of reduced operations many parts makers so far have had their best year since 1929. Shoe production in August hit an all-time record, with that of the following months holding up well. Rubber glove manufacturers are also enjoying their greatest activity in many months. Shipments of chemicals have been decidedly upward. Harvest of this year's farm crops turned out better than expected.

In regard to the social securities law, most manufacturers have given it little attention to date. Companies are inclined to continue with their policies already in use. Later, in keeping with the conditions of the new law, they may find it necessary to make some changes.

The Goodyear Tire & Rubber Co., Akron, purchased 74.65 acres of land from the Robinson Clay Product Co. at a price of $1,962,500. The Goodyear plant No. 3 is located on this property, which has been occupied by lease with purchase option since 1920. Certain controversies that had arisen regarding the lease were settled by the transaction.

Veteran Rubber Man

William Metzler, consulting superintendent of the Goodyear Tire & Rubber Co., Akron, who recently celebrated his seventy-fifth birthday, has spent half a century in the rubber industry. His successful record includes six years with The B. F. Goodrich Co., Akron, five with a Trenton, N. J., rubber concern, fifteen years with the Diamond Rubber Co., Akron, and nearly twenty-three with Goodyear. Thus Mr. Metzler's career spans the entire development of rubber as a major industry.

When he joined Goodrich, February 1, 1886, one of its two hundred employes, rubber tires were unknown, and mechanical goods constituted the major part of rubber manufacturing; rubber compounds were rule-of-thumb and secret formulae, and no laboratories or accelerators existed. For three years he was in charge of compounding; in those days when even organic compounds had not yet come into use. Then he headed Goodrich's crude rubber department and later the druggists' sundries department. But in 1892 he was lured to Trenton as superintendent of a rubber plant there. Meanwhile the Diamond company had come into being, in 1894. Then in August, 1897, Mr. Metzler became its assistant superintendent.

By 1912, however, tires had superseded mechanicals as the major division of the industry, and Goodyear was specializing in tires, but not unmindful of the profits in mechanicals. So after the merger of Diamond and Goodrich, Goodyear entered the mechanicals field and on February 1, 1913, secured the services of William Metzler as superintendent of its new division. For the past several years he has been consulting superintendent, with H. E. Campbell acting as superintendent of the division and carrying on the heavier work.

William Metzler

Pop Metzler, as he is affectionately known throughout the company, lives with his wife and two daughters. He also has two sons, one of whom, David, is manager of The Philadelphia Rubber Works Co. in Akron.

General Tire & Rubber Co., Akron, with the cooperation and assistance of the Federal Communications Commission, United States Bureau of Air Commerce, National Aeronautic Association, the Institute of the Aeronautical Sciences, the Aeronautical Chamber of Commerce, and various chambers of commerce, recently sponsored with the Columbia Broadcasting Co. a unique flight. For the first time in the history of aviation and radio an airplane, General's *Miss Streamline*, guided entirely by radio broadcasts from regular commercial stations, made a 1,300-mile flight in one day to eight widely separated cities, while radio listeners in areas surrounding these cities listened to broadcasts from the plane in flight, describing how the plane was being guided to the towers of the station on which it was tuned in. All the ship's usual air navigational instruments were sealed to insure that only the radio compass would be used. Ray W. Brown, noted pilot and General Tire sales executive in charge of the company's aviation activities for several years, and Reeder Nichols, radio engineer, broadcast from the plane.

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With *Miss Streamline* Are Pilot Ray Brown (at Right), W. O'Neil, President of General Tire, Sponsor of the Flight, and His Daughter Grace

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The Faultless Rubber Co., Ashland, at its annual meeting September 27 elected the following officers: T. W. Miller, chairman of the board; W. H. Balch, president; John C. Myers, first vice president; C. H. Wolfe, second vice president; George A. Meiler, secretary-treasurer; R. D. Stockdale, comptroller; V. L. Miller, general manager; Z. T. Wile, assistant treasurer; and R. C. Johnson, assistant secretary.

Dayton Rubber Mfg. Co., Dayton, October 18 paid its workmen, numbering about 700, their week's wages, totaling $20,000 and weighing about 1,200 pounds in coins, in silver dollars to visualize concretely the amount of money it distributes in payrolls. The figure of 700 persons is nearly an all-time peak, with several departments operating three shifts to keep up with the plant's increased production. Factory payrolls reach over $1,000,000 annually now, and with other expenditures of the company some $2,000,000 is distributed each year, officials state.

New Head of Rubber Division, A. C. S.

Many recognitions of his worth have been shown Norman Arthur Shepard during his highly successful career, and the latest tribute to the man was his recent election as chairman of the Rubber Division of the American Chemical Society for the 1935-36 term. At present he is also director of chemical research of the Firestone Tire & Rubber Co., Akron, O.

When young Shepard, in 1907, was graduated from the high school in New Haven, Conn., where he was born April 8, 1890, he was class valedictorian. Of course he went to Yale, graduating from the Sheffield Scientific School in 1910, a Ph.B. He then attended the university's Graduate School, to win his Ph.D. in 1913.

For some time he also taught at his Alma Mater, serving as assistant instructor while pursuing his graduate studies, as instructor in chemistry from 1913 to 1917, and as assistant professor in chemistry until 1919. That year the rubber industry secured his services when he joined Firestone as director of organic chemical research, continuing as such to date, with the added duties of director of chemical research conferred upon him in 1925.

Dr. Shepard has published jointly researches on pyrimidines, hydantoins, amines, poisons in the rubber industry, vulcanization and weathering of rubber, and on cord tires. He has, moreover, taken out several patents covering different phases of his work.

His outside interests are many and diverse. Besides being an active member of the A. C. S., Dr. Shepard belongs to American Institute of Chemical Engineers, American Institute of Chemists, American Physical, Electrochemical, and Faraday societies, Deutsche Chemical Ges., Societe Chimique de France, Society of Chemical Industry and Chemical Society, both of London, Deutsche Physikalische Ges., and Kolloid Ges. The name of Norman A. Shepard appears, too, on the roster of Sigma Xi, University and Franklin clubs, both of Akron, Yale Graduates Club, and International Torch Club, he having been president of its Akron Local Section 1928-29.

Norman Arthur Shepard

This research executive can be reached at 154 Casterton Ave., Akron, O.

The Ohio Rubber Co., Willoughby, recently completed alterations in its automobile mat department whereby both greater production efficiency and much improved working and safety conditions for employes will be secured.

Mansfield Tire & Rubber Co., Mansfield, according to President George W. Stephens will increase its yearly payroll next year between $400,000 and $500,000 because of higher operating volume. New sales outlets will increase production 25%. New equipment will be installed about November 1. Peak operations were reached this year when 1,000 men were employed in February and March. During the slack summer season about 500 are employed.

Automotive Products Co., 3000 Woodhill Rd., Cleveland, manufacturer of automobile trimming supplies and replacement parts, has taken a long term lease, as of August 1, with option to buy the property of the old Salem Rubber Co., Salem, which will be operated under the name Midland Rubber Co., to manufacture automobile floor mats, running board matting, fan belts, and radiator, car heater, and garden hose, and a general line of mechanical rubber goods. G. W. Schwan, for many years with The B. F. Goodrich Co., Akron, and more recently superintendent of the Quaker City Rubber Co., Philadelphia, Pa., is plant manager. Most of the heavy equipment such as boilers, pumps, mill line, calender, presses, and vulcanizers were in the plant when taken over, but the new concern expects to purchase some additional equipment in the near future.

The Circuit Court of Appeals in the Sixth Circuit handed down a decision October 10 substantially reversing the District Court below. The claims of the United States Rubber Co. relating to flat building and differential pressure shaping were broadly denied against Firestone. The plaintiff, however, did succeed in having its claims for the vacuum box covered by its Abbott patent sustained and held valid and infringed. Consequently all members of the industry who are using the vacuum box, as we understand the situation, must reckon with the apparatus invention of the Abbott patent. Whether the litigation will be allowed to rest with the present decision or be carried to the Supreme Court depends in all probability upon the legal remedies available to the United States Rubber Co. and its judgment on the course to pursue.

MIDWEST

IN RURAL districts, where farmers recently received large sums from the government, buying is heavy. This state of affairs has spurred wholesale trade to even greater activity. Steel plants in the Midwest are expanding operations; while small industries are running from 12 to 15% ahead of 1934 figures. Labor difficulties are lessening.

Monsanto Chemical Co., St. Louis, Mo., has transferred R. E. Richards, general manager of sales for the Swann products division, from its New York, N. Y., office to the home office in St. Louis.

Judsen Rubber Works, Inc., 4107 W. Kinzie St., Chicago, Ill., because of increased contracts for molded goods raised its press and mill capacity approximately 20%. Judsen is also working on plans for additions to its boiler rooms to accommodate larger steam boilers soon to be ordered. The company makes molded rubber parts for railroads, automotive houses, and sporting goods as well as a large number of items on individual specifications.

Golf Ball, Inc., 5816-30 Lowe Ave., Chicago, Ill., reports that because of the great demand for its liquid center golf balls approximately 85% of its production falls in this class and the remaining 15% in the hard rubber center types. S. Deutsch, recently elected president of the company, has charge of all sales and merchandising activities; while Treasurer Erwin Huebsch, who founded the business in 1930, is in charge of all manufacturing operations. William Pearce, superintendent of production, has had more than thirty years' experience in the rubber and golf ball industry in England and America. The company, manufactures golf balls exclusively, featuring The Famous Scot Family including Bonnie, Flying, and Canny Scot balls.

NEW ENGLAND

SOME plants, especially in Connecticut, have booked the greatest number of orders in years. The cotton textile industry in general is improving; while chemical concerns also are doing well. Manufacturers of miscellaneous metal and machine products are experiencing a boom. The demand is sustained for electrical household appliances.

A very marked improvement has occurred in the rubber manufacturing situation in Rhode Island the past few weeks. Plant heads report operations now approximate the 1934 pace as factories approach their seasonal peak. Indications are that the upturn will proceed at an even faster speed in the weeks immediately ahead. Manufacturers look ahead with optimism, but they point out that any forecast for their 1935 business volume is difficult in that a large part will depend on the reception which the buying public gives their new offerings.

Employment in the rubber goods industry also improved. The rise since July was set by the State Commissioner of Labor at 9.9%. While the August total was slightly below that of a year ago, further gains during September brought the figures above those of 1934. Payrolls during September were reported by the Brown Bureau of Business Research as amounting to $210,667 for the rubber group, a gain of 7.6% over August and of 8.2% over September, 1934.

Low inventories in manufacturers' hands are said to be due to the fact that earlier in the year most producers underestimated their market and are now moderately pressed to fill the increased demands. Inventories in the trade are also small, it is reported, this fact being especially significant in that it indicates that goods now moving into trade channels are not piling up on shelves, but are reaching consumers.

Makers of general rubber goods such as bathing suits, golf balls, tank lining, and rubberized thread report that the pace of the seasonal pickup during August and September was not quite equal to that of a year ago, but that figures for the opening weeks in October indicate that the coming couple of months at least will show better volume so that the average for the fall months will equal, if not exceed, those for 1934. One bright spot in this division of the industry is the sharp gain in operations in the rubberized thread department. Cut rubber thread has also taken a turn for the better.

Manufacturers of surgical supplies and flatwear are especially pleased with the recent renewal of demand for the higher quality goods, pointing out that in general orders for the cheaper lines form only a small proportion of their activities. They stress the fact that while many American concerns turned to the production of low-priced articles to obtain business during the past two or three years, most of it was done at little or no profit. Those plants which refused to cut quality in the belief that the higher-class goods would again be in demand are now finding their faith justified and are doing a pleasing volume of business at a satisfactory profit.

Sporting goods for the most part are now moving slowly owing to the seasonal character of demand. Local plants are just clearing decks to start making samples for next year's trade in golf balls, swimming suits, and similar goods.

Production of rubber soles and heels is much more active than recently, but manufacturers say that most of this business is written up at unprofitable price levels. Industrial tank lining and roll covering departments are maintaining the steady pace in evidence for some time. Unit volume in the rubber sundries industry in Rhode Island is at least 10% in advance of that of a year ago. The main section of the sundries industry in Rhode Island now operates on a full-time basis, five days a week, single shift.

Globe Rubber Works

Globe Rubber Works, Inc., 45 High St., Boston, Mass., held a Rubber Problem Conference, at Hotel Highland, Springfield, Mass., October 3, attended by approximately one hundred invited guests consisting of plant executives, mechanical engineers, and purchasing agents of western Massachusetts industrial plants, as well as city officials. Besides the banquet another highlight of the meeting was the exhibit of mechanical rubber goods, said by President Winfield S. Knowles to be the largest ever shown in New England. It was prepared by the engineering department of Raybestos-Manhattan, Inc. This exhibit, open day and evening, served as a basis for the Rubber Problem Conference and was conducted by W. L. White, director of research and laboratories at the Manhattan Passaic, N. J., plant.

Mr. White, recognized authority in the rubber field, was introduced by A. I. Knowles, Globe Rubber manager. Mr. White described the great advances made in the rubber industry during the past few years. To show the importance of rubber in industry and international affairs Mr. White stated that if Italy's raw rubber supplies were cut off, the war with Ethiopia would fizzle out owing to the fact that no country in the world is capable of producing enough synthetic rubber to run both an army and a nation.

Also participating in the program were C. J. Leonard, sales manager, J. R. Coveney, of the Globe company's Boston office, J. F. Flanagan, special sales representative of Springfield, and William T. Jarvis, New England branch manager of the Manhattan Rubber Mfg. Co.

Globe Rubber Works, Inc., is a distributing organization that was founded by Henry F. Knowles more than forty years ago and has been an important influence in the progress and application of mechanical rubber goods to the industries of New England.

Apex Tire Co., 1086-1090 Westminster St., Providence, R. I., on October 17 suffered damage of several thousand dollars to its plant and stock from a fire.

Lowell Rubber Co., Lowell, Mass., is devoted primarily to rubberizing cotton, wool, and silk fabrics for sundry purposes. T. B. Coughlin is owner and manager of the plant.

Plymouth Rubber Co., Inc., Canton, Mass., is installing a factory in Feyzin, France, for the manufacture of rubber thread, to be known as Societe Plymouth Francaise. Walter Bieringer, Plymouth vice president, recently returned from abroad after completing the necessary arrangements. Plymouth already has a factory in Manchester, England, which is manufacturing, for the British market, most of the products made at Canton, such as friction tape, rubber bands, rubberized fabrics, and imitation leather.

Tercentenary Industrial Exposition, Hartford, Conn. Among the many exhibitors at the recent exposition at the Hartford State Armory were United States Rubber Products, Inc., and Naugatuck Chemical, both of Naugatuck, Conn., and The Bristol Co., Waterbury, Conn. In addition to a wide variety of its products and the original display at the first Chicago world's fair, U. S. Rubber also displayed specimens of synthetic rubber, which attracted the attention of thousands who know little of this new development. Bristol had on view recording and measuring instruments of various types; while Naugatuck Chemical showed a wide range of its goods.

Gould Golf Ball Co., Inc., 532 Main St., Wakefield, Mass., recently changed its name to Crystal Golf Ball Co., Inc., but no other corporate changes have been made. Officers and directors of the company remain the same: Edward N. Winship, president; Frederick G. Miller, treasurer and general manager; and Clarence C. Bartlett, assistant treasurer and vice president. The corporation was organized November 1, 1932, and the financial reorganization occurred in January, 1934. The company has enjoyed constant growth, according to Mr. Miller, and has steadily improved the quality and the construction of its golf ball line, offering four brands: Super Craft, Craft, Old Glory, and Traveler. Sales offices are maintained in principal cities.

Colonel Speaks Resigns

Col. Charles E. Speaks for many years a dynamic figure in both the manufacturing and merchandising phases of the rubber business, recently severed his connection with the industry by resigning his position as president and general manager of the Firestone Footwear Co., Hudson, Mass. Since 1913, when he began as manager of the Firestone cycle tire department, Colonel Speaks has occupied a series of ever-increasing responsibilities with Firestone, except from 1917 to 1919 when he rendered distinguished service in the transportation division of the United States Army in France. For this he received two citations: D.S.M., and French officer of the Academy of Beaux Arts with Silver Palm.

The additional chronology of his industrial activities with Firestone are as follows: manager of truck and bus tire department, 1915-1917; manager of government department, 1919-1920; European export manager, with headquarters in London, 1920-1926; vice president and general manager of Firestone Footwear Co., 1926-1932; and president and general manager from 1932 until the time of his resignation.

Colonel Speaks' only plans for the immediate future consist of taking an extended cruise with Mrs. Speaks.

Ernest I. Kilcup, executive manager of the Davol Rubber Co., Providence, R. I., was the principal speaker at the September meeting of the Providence Chapter, National Association of Cost Accountants, held at the Metacomet Golf Club.

"If we can have definite assurances of monetary stabilization, with or without the gold standard, and no more of the radical type of legislation, we are all set for a business recovery that should carry us to the 1928 level within fifteen months," he told the meeting. . . .

"Because of national and international conditions," Mr. Kilcup continued, "it is no longer possible to institute long-term business planning. Factors which have brought this about include the uncertainty of a cooperative attitude on the part of labor in the attempt to solve the problems of capital and labor."

Charles A. Blake, president of the Elm City Rubber Co., 73 Wallace St., New Haven, Conn., manufacturer of sheet goods, rain capes, baby pants, molded specialties, etc., is on a several-weeks trip of rest and recreation following his recovery from illness of the past few months. Robert Blake, vice president, announces the recent opening of general sales offices in the Flatiron Bldg., 175 Fifth Ave., New York, N. Y., where a permanent display of the products of the company is being prepared.

Boston Woven Hose & Rubber Co., Boston, Mass., effective October 1, named William A. Briggs, with the company over three decades, in charge of its

Col. Charles E. Speaks

southern sales district, with headquarters in Atlanta, Ga.

Enterprize Rubber Co., 168 N. Main St., Providence, R. I., a partnership between Frank Kantor and Daniel L. Goldman, has been dissolved, Mr. Goldman retiring. The retail business will be continued at the same address under the same name by Mr. Kantor as an individual.

The American Cyanamid & Chemical Corp., 30 Rockefeller Plaza, New York, N. Y., has acquired the Veran Co. plant near Stamford, Conn. This property, approximating 250,000 square feet of floor space, will be used for the consolidation of various laboratories of the company into a central research and development organization. Plans for occupancy are under way now, and the plant is expected to be in operation shortly after the first of next year.

American Cyanamid has also announced that B. W. Henderson, sales manager of the crude rubber department, has been placed in charge of the sales of crude chemicals as well. The department will be known as the rubber and rubber chemicals department.

U. S. Specifications

Proposed Federal Specifications, as follows, have been issued by the Treasury Department, Federal Specifications Division[1] for any desired comment or criticism. All such must be received at the office indicated not later than November 6 on ZZ-B-556 and F.S. 402 and November 11 on ZZ-T-721b to receive attention of the technical committees considering specifications.

Proposed Revision F.S. ZZ-B-556 for Short Heavy Rubber Boots.

Proposed Revision F.S. 402 for Hip Rubber Boots.

Proposed Revision ZZ-T-721b for Automobile and Motor Cycle Inner Tubes.

[1] Room 751, Federal Warehouse, Ninth and D Sts., S.W., Washington, D. C.

PACIFIC COAST

RUBBER goods manufacturers, especially of mechanicals, find volume of business running in some instances 30 to 40% ahead of last year's figure. Business continues to grow better, with marked improvement in the San Francisco and Bay District; while in Oregon it is on the uptrend despite a few setbacks due to strikes.

The automobile mechanics' walkout has been a disturbing factor, causing manufacturers to abandon plans for the annual auto show in November. Despite this trouble sales of new cars continue substantially ahead of last year's figure. Building operations are maintained at a high level. Heavy rains throughout the coast states caused wide damage to maturing fruit crops.

L. A. Rubber & Asbestos Works, Inc., 124 E. Third St., Los Angeles, Calif., manufacturer and distributer of mechanical rubber goods and asbestos insulation since 1898, has under construction a rubber manufacturing plant which will be operated as the L. A. Rubber Mfg. Co. Such products as molded rubber goods of every description, matting, sheet rubber, tubing, and certain types of hose will be in production by January 1. Officers of the new company follow: W. A. Corder, president; Walter Cox, vice president; and S. K. Durfee, secretary. These executives hold similar posts with the Rubber & Asbestos Works, which has its factory and warehouse at 2031 E. 51st St., Los Angeles.

OBITUARY

Henry W. Young

HENRY W. YOUNG, assistant to H. A. Galt, vice president of the Pittsburgh Plate Glass Co. and president of The Columbia Alkali Corp., died at his home in Barberton, O., October 21. Born at Croton, O., in 1882 and educated in local schools, Mr. Young was employed by the Pennsylvania Railroad Co. for many years. In 1917 he joined Pittsburgh Plate Glass as division traffic manager.

Prominent in civic affairs, church and fraternal organizations, and enjoying a wide acquaintance in business and railroad circles, his death will be keenly felt by his hosts of friends.

Ovac

Ovac is a new accelerator developed specifically for tire treads to meet the increasingly severe service conditions imposed on tires by the newer cars, trucks, and buses. It is a blend of the thiazole derivatives of two specially selected aldehyde amines. Recommended to use with Ovac is a small proportion of T-J-B, an antiscorch and antioxidant which reduces persistence and overcuring.

EASTERN AND SOUTHERN

BUSINESS conditions in eastern New York show a decided upward movement. Rubber factories are nearly all working on full time at present, with orders coming in in sufficient volume to insure full-time operations throughout the winter.

Eastern manufacturers catering to the automotive industry have enjoyed excellent business the past months, which they expect will continue for some time to come.

The best sales since 1929 were reported by producers of electrical appliances, who are now two to three weeks behind on deliveries due to the heavy volume of current business. The recent improvement in cotton goods continues.

In the South reports indicate another brisk rise in buying as employment and payrolls are substantially increased. Building operations continue an important factor in business recovery. Cotton is moving, and most of it is being sold as ginned, thus releasing considerable money to augment the purchasing power of the rural population.

The general belief in regard to the social securities law is that many of the philanthropies sponsored by rubber manufacturers will be maintained either in part or in full, for it is held that the new law does not furnish the average worker enough compensation to permit him to live on a very satisfactory standard.

National Industrial Advertisers Association at its recent annual meeting in Pittsburgh, Pa., elected as president R. Davison, manager of the market developing division, New Jersey Zinc Sales Co., 160 Front St., New York, N. Y., by which firm he had been employed two decades. For two years prior to his election to the N. I. A. A. presidency Mr. Davison had been a vice president and had also long been active in its affairs and those of the Technical Publicity Association, the New York affiliated organization.

Krebs Pigment & Color Corp., Wilmington, Del., recently entertained for three days members of the Baltimore Paint & Varnish Production, the Philadelphia Paint & Varnish Production, and the New England Paint Production clubs. The guests, who numbered well over a hundred, during their program of varied activities, were shown through the Krebs lithopone manufacturing plant, Newport, Del. R. S. Burr, manager of Southeastern sales, was in charge of the entertainment; while J. E. Hughes, manager of Northeastern sales, handled the golf tournament. Krebs likewise invited the Midwest production clubs to be its guests at Wilmington enroute to the convention of the National Paint, Varnish & Lacquer Association held in Washington late last month.

J. R. Weir

J. R. Weir, director of agricultural research, Ford Motor Co., Dearborn, Mich., sailed on the *Aidan*, October 15, to Belen, Para. Mr. Weir regards the Ford holdings in Para, approximately 2,800,000 acres, as a gigantic botanical research laboratory for the study of all kinds of tropical vegetation that may be developed along lines of commercial importance and at the same time subjected to economical controlled cultivation. While present research deals with a variety of fibrous plants, oil yielding and food nuts, and soya beans, by far the greatest attention is given to rubber. Clone propagation experiments now cover 10,000 acres planted, the oldest of which is of tappable age, but not commercially so used at present. Mr. Weir directs the diversified agricultural interests of the Ford Co. in this country as well as foreign ones.

McCarty Aniline & Extract Co., Inc., importer and manufacturers' agent for dyestuffs and liquid rubber compounds, 72 Cliff St., New York, N. Y., manufactures the new Sta-Tite flexible rubber expansion joint material adopted by the Massachusetts Department of Public Works for use in joining the slabs of cement concrete that constitute the surface of many roads in the state.

National Research Council, through its division of engineering and research, 29 W. 39th St., New York, N. Y., from October 20 to 25 conducted about fifty leading executives on a tour of outstanding laboratories, including those of the General Electric Co., The B. F. Goodrich Co., and Bell Telephone Laboratories, Inc. The purpose of this trip, according to Maurice Holland, director of the Council's engineering division, was to make the business executive more conscious of research and its application to industry.

Wellington Sears Co., Inc., 65 Worth St., New York, N. Y., fabrics manufacturer, has announced that Clarence W. Lindsey, formerly with Marshall Field & Co., has joined its staff to aid in the development of fine synthetic yarn fabrics.

Whittaker, Clark & Daniels, Inc., chemical manufacturer, 260 W. Broadway, New York, N. Y., recently purchased a factory with railroad siding in Jacobus Ave., Kearny, N. J.

Vulcanized Rubber Co., Morrisville, Pa., according to President S. H. Renton, is experiencing a busy season.

Walter Ritz, with E. I. du Pont de Nemours & Co., Inc., for twelve years, recently became the New England representative of the United Carbon Co., working out of that company's New York office in the Empire State Building, according to W. W. Higgins, eastern district sales manager. Mr. Ritz is a graduate of the University of Delaware, having received his A.B. degree there in 1920. He is well known to the New England rubber trade through his activities in the distribution of D.P.G.

The Rubber Manufacturers Association, Inc., 444 Madison Ave., New York, N. Y., recently closed its Chicago and Los Angeles branches and several weeks ago had also discontinued ten of the thirteen field offices it had maintained to police the retail market under code regulations in the attempt to discourage price cutting. These closings leave the R.M.A. with only its New York office, operating with a reduced personnel under the direction of General Manager A. L. Viles. His assistant, W. G. Manley, has resigned to join Kelly-Springfield Tire Co.

Lee Rubber & Tire Corp., Conshohocken, Pa., through Vice President A. A. Garthwaite announced that August bookings of its mechanical division were the largest of any month since April, 1930. The new business booked by the Lee subsidiary, Republic Rubber Co., Youngstown, O., totaled $281,000 and also represented a 60% increase over business in August, 1934. The plant is now constructing one of the largest belts ever made, for a government project.

T. H. Hewlett, chairman and managing director of the Anchor Chemical Co., Manchester, England, arrived in New York on the *S. S. Europa* September 26. He attended the meetings of the Rubber Division, A. C. S., in Akron, September 30 and October 1 and returned to New York after visiting some Akron rubber companies. He also spent a few days at Charleston, West Va. Anchor Chemical sells the R. T. Vanderbilt Co.'s materials in the United Kingdom and all countries outside Europe and America and also represents the United Carbon Co. in Great Britain. Mr. Hewlett returned to England on October 19.

NEW JERSEY

WHILE New Jersey rubber manufacturers in most instances report business as holding up fairly well, they hope for better prices soon. Declaring profits are too small on some products, they believe there should be an advance in prices. Hard rubber production has shown some improvement, with a better demand for certain mechanicals.

Machinery makers, however, according to their contacts with the rubber industry, do not seem to believe it is thriving so fast. They find better activity in plastics materials.

Hope is expressed that eventually the social securities law enacted in the last session of Congress will become a great social benefit. But so far the only result that can be seen is a direct tax on business, whether it can afford it or not.

Pocono Rubber Co., Trenton, finds business fairly good.

Leon B. Hughes has equipped a plant at his home near Flemington to manufacture floor mats from old automobile tires. A tire, inserted into a machine, is stripped into long lengths of rubber. The strips are then wired into a mat. Mr. Hughes has purchased from the concern holding the patents on the mat and making the equipment. He is now organizing a sales force to dispose of his products.

Essex Rubber Co., Trenton, is enjoying a good fall season in all departments.

Mercer Rubber Co., Hamilton Square, reports business much better than during last month, with stocks running light. President William H. Sayen, recently returned from a business trip in the Midwest, found rubber conditions much improved, but profits light.

Pierce-Roberts Rubber Co., Trenton, has enough unfilled orders on hand to insure a good fall business. The company is employing two shifts.

Whitehead Bros. Rubber Co., Trenton, stated that business has dropped both in its mechanical and shoe departments.

Puritan Rubber Co., Trenton, running twenty-four hours a day with three shifts, is receiving increased orders for marbleized rubber tile flooring.

Acme Rubber Mfg. Co., Trenton, announced that business conditions showed little improvement last month. John A. Lambert, vice president and treasurer, anticipates a better output this winter.

Boonton Rubber Co. plant, Boonton, was purchased by the Sprucolite Corp. The plant consists of sixteen acres and several large building units, comprising 40,000 square feet.

The La Favorite Rubber Mfg. Co., Paterson, manufacturer of patented packings and various types of molded specialties, is engaged in moderate expansion and remodeling programs including the installation of several machines to improve product quality and customer service, according to C. R. Mastin, president.

Jos. Stokes Rubber Co., Trenton, is operating twenty-four hours a day. Milton H. Martindell, vice president and treasurer, returned recently from a trip through the Midwest, where he visited the company's branches. Foreman Stephen Gavel, 52, was severely stabbed by an embittered discharged employe while the former was on his way to work September 23. The victim was taken to a Trenton hospital where thirty stitches were required to close wounds on his neck and arm.

W. A. Gibbons, director of the General Laboratories of the United States Rubber Co., Passaic, sailed from New York, October 11 to England where he expects to spend about six weeks in the interests of his company.

The Thermoid Co., Trenton, continues operating twenty-four hours a day, being particularly busy in the automotive production department.

Near Para Rubber Co., Trenton, is experiencing better demand for reclaimed rubber, according to President B. M. Rosenthal.

American Hard Rubber Co., Butler, renewed a six-month agreement with the Rubber Workers' Union, but the latter's demand of a general increase of 10% in wages was not granted. Officials pointed out that the wage level was higher than the prevailing one in the industry. A raise of 5¢ in the minimum hourly rate for women also was rejected. In the future an employe quitting voluntarily or being discharged loses his seniority rating except in the case of war service.

Luzerne Rubber Co., Trenton, saw business drop off in October after a good volume during September.

The Home Rubber Co., Trenton, had an exhibit at the recent Trenton State Fair.

New Jersey Rubber Co. plant and equipment at Lambertville were sold at auction October 10. Seventeen brick and steel buildings, two and three stories high, and the land went to the Citron-Byer Co., Trenton, for $3,800, which also purchased for $600 a portion of Lewis Island, where water power was developed for the factory. Another building, 80 years old, was bought by the Panther Rubber Co., Chelsea, Mass., for $4,600. Equipment including boilers, motors, 3,000 feet of rubber belting, and 20,000 pounds of rubber were sold to New York and Boston interests. The older building was used as a grist mill. The New Jersey Rubber Co. operated from 1890 until five years ago reclaiming rubber for du Pont, John A. Roebling's Sons Co., and other prominent concerns. From 1919 to 1925 the plant ran with a twenty-four hour shift and employed 125 men. The Clapp interests of Boston purchased the company in 1909 from the late Edward R. Solliday, one of the organizers in 1890. The decline in the price of crude rubber forced the company to close down.

FINANCIAL

American Cyanamid Co., 30 Rockefeller Plaza, New York, N. Y., has arranged to borrow privately about $9,000,000 to pay off all funded and bank debts and those of its subsidiaries. More than two-thirds of the loans are represented by 4% sinking fund debentures due in 1955. The company called for redemption on October 1 at par and accrued interest its 15-year 5% debenture bonds, of which $3,960,000 were outstanding December 31, 1934, $1,960,000 of 6% purchase money notes due in 1938, and $295,000 of Amalgamated Phosphate Co. first mortgage sinking fund 6% bonds due in 1936.

Boston Woven Hose & Rubber Co., Cambridge, Mass., for the year ended August 31, 1935, earned $82,406.97 after a charge of $192,508.31 for depreciation on plant and machinery and provision for taxes accrued during the year. After paying dividends on the preferred stock amounting to $45,000 and deducting losses on raw materials sustained during the year amounting to $17,748.82, the amount earned applicable to the common stock was $19,658.15, equivalent to approximately 23¢ per share on 86,000 shares outstanding. From this, however, must be deducted a further sum of $15,907.68 arising from the change in the date of assessment of local property taxes from April 1 to January 1. Sales for the year increased $340,831.64, or 7.8%. Poundage shipped increased 1,844,435 pounds, a gain of 9.05%.

Columbian Carbon Co., 41 E. 42nd St., New York, N. Y., and subsidiaries in a preliminary statement for the six months ended June 20, 1935, subject to year-end adjustments, show a net income of $1,502,492 after taxes, depreciation, depletion, and minority interests, equivalent to $2.79 a share on 537,681 no-par shares of common stock. This compares with $1,185,529, or $2.20 a share that was earned on 538,420 shares in the first half of 1934.

Electric Hose & Rubber Co., Wilmington, Del., for the year ended on August 31 reported a net income of $43,376, equal to $3.40 a share on 12,741 capital shares, against $41,873, or $3.29 a share, in the preceding fiscal year.

Faultless Rubber Co., Ashland, O., for the year ended June 30 reported a net profit after depreciation, federal taxes, and other charges, of $164,168, equal to $2.50 a share on 65,450 no-par capital shares, against $204,163, or $3.12 a share, in the previous year.

United States Rubber Co., 1790 Broadway, New York, N. Y., has called for redemption on December 1, at 100¼ and accrued interest, its three-year secured 6% gold notes due June 1, 1936. On June 30 there was outstanding $4,225,600 of the notes out of an original issue of $5,900,000.

Rubber Industry in Europe

GREAT BRITAIN

Footwear Fair

Many rubber manufacturers, as usual, were represented at the latest International Shoe and Leather Fair at the Royal Agricultural Hall, Islington, October 7 to 11.

Shoes for a variety of purposes were displayed by the Dunlop Rubber Co. Among these was a range of popular-priced heeled shoes for home and office wear; a new lightweight sole for women's shoes was also featured.

The new Rest-a-Ped heel cushion and arch rests displayed by Phillips' Patents, Ltd., are of pure rubber, and, though remarkably resilient, provide entirely adequate support for weak arches.

Heavy Wellingtons and hip boots were the main attraction at the stand of the local Goodrich concern; while rubber soles and heels, including a heel with a leather center for women, were among the chief exhibits of the Goodyear Tire & Rubber Co. (Great Britain), Ltd.

Itshide, Ltd., showed a full line of leather center heels besides a new line of quarter tips for heels; the latter come in three thicknesses and have an unusually wide flange.

The Paralavo sports shoes of Miner Rubber (London), Ltd., have uppers of a canvas having a washable finish.

Imperial Chemical Industries, Ltd., showed, besides various dyes and finishes for different types of shoes, the Necolastic, latex base, all-purpose cement.

Redfern's Rubber Works, Ltd., exhibited a special lightweight stick-on sole so designed that a minimum number of sizes only are necessary for the full range of shapes of soles.

International Rubber Powder Co.

The International Rubber Powder Co. was formed with a capital of £250,000 to acquire the business of the Rubber Powder Co., Ltd., also to acquire and exploit the inventions and patents covering the production of granulated rubber from dispersions or solutions, the manufacture of sheet by atomizing and drying latex, and the manufacture of rubber sole crepe by atomizing, drying, and pressing latex, further to adopt an agreement with the company mentioned and with Adam J. A. Y. de Schepper and John A. Jamieson, and to carry on the business of manufacturers and preparers of and dealers in gutta percha, balata, rubber, and all kinds of rubber goods. The first directors are Arnell Thorp, John A. Jamieson, and Age Meinisz, rubber planters, and Markham H. Thorp, solicitor, (all directors of Rubber Powder Co., Ltd.), and William S. van Reesema.

The Rubber Powder Co. was formed January 25, 1934, with a capital of £30,000 to acquire the patents covering the de Schepper process of producing powdered rubber. The latest company report indicates that at first an experimental machine with one belt was built in Holland and, proving satisfactory, was sent to Ceylon. Here it was run for two months when sufficient data had been collected for the constructors to permit further improvement and simplification. Then a new machine of six belts (three to a tunnel) was built, and after a demonstration in Amsterdam was sent to Ceylon where tests on a rubber plantation indicated that a slight modification would lead to greater economy in operating the machine. A four-belt improved machine was ordered for the N.V. Rubber Cultuur Mij., Amsterdam, and this is also being altered to reduce costs of production.

The sale of the company's business and assets (except book debts, etc.) to the International Rubber Powder Co., for £90,000, was discussed at a meeting October 15.

British Notes

The Telegraph Construction & Maintenance Co., Ltd., and Siemans Brothers & Co. have arranged to amalgamate their interest in the manufacture of submarine cables with insulation of plastic material as gutta percha, and a private company, Submarine Cables, Ltd., has been formed. The new concern, with a nominal capital of £220,000 in £1 shares, in which the two companies participate equally, will operate at the submarine cable works of the Telegraph Construction company, at East Greenwich, which it has leased for the purpose.

As a result of requests received by the British Standards Institute from the Research Association of British Rubber Manufacturers, rubber test requirements are likely to be coordinated and standardized in the near future. A representative conference recently held to consider the requests unanimously agreed to recommend to the Chemical Industry Committee of the British Standards Institution that a Technical Committee be formed from representatives at the conference which would have to give the matter immediate attention.

Commenting on an article appearing some months ago in the *India Rubber Journal* on the need of an "Ottawa" East of Suez, by which cheap rubber goods produced in British territories in the East would be excluded from the United Kingdom and the Dominions, W. B. Wiegand, of New York, warns that this remedy would only postpone the evil day, but could not alter the inevitable trend which seemed clearly to be the approaching ascendancy of the Far East as the world's manufacturing center.

The big fire that recently raged on the London waterfront over thirty-two hours ate into a range of seven-story rubber and spirit warehouses. At least 4,000 tons of rubber were burned.

Dr. Wallace H. Carothers, research chemist for E. I. du Pont de Nemours & Co., Inc., Wilmington, Del., U. S. A., recently addressed the Faraday Society on "Giant Molecules," and referred to the scientific formulation of synthetic rubber. Dr. Carothers, who played an important part in the development of DuPrene, or synthetic rubber, also visited English universities to observe their progress in chemical research.

Germany

The regulations prohibiting crude rubber exports, which also apply to waste rubber, have now been extended to include hard rubber dust and ground soft rubber.

The existing compulsory cartel which the government forced upon tire manufacturers in July, 1934, will be continued until the end of 1935. Originally it was to run to the end of 1934; then the period was prolonged to June, 1935, and again to August, 1935. Hitherto only pneumatic tires were affected by the cartel regulations, but now it seems semi-solid tires also are included.

If the exigencies of the times lead to tightening of control in some directions, in others they have the opposite effect. In the interests of economy the ruling whereby the use of the old-type solid tire was prohibited after October 1, 1935, and all trucks had to be equipped either with pneumatic tires or the new type of solids, has now been modified. Owners of trucks equipped with old-style solid tires still in good condition may continue to use them until they are worn; they may also use up any stocks of these tires they may have on hand.

An ingenious German manufacturer has taken a tip from the poorer classes of people who in countries as far apart as China and Greece, for instance, have been wont to construct rude but very durable footwear from worn tire carcasses. He is cutting out soles from such tires and sewing them on to the leather uppers of heavy work boots of the type usually furnished with wooden soles. It seems the new boots not only look well, but are more comfortable than the wooden soled shoes besides being less noisy and more durable.

The Dartex A.G. fur Kautschuk-Verarbeitung, Frankfurt a.M., reported a loss of 33,600 marks for 1934, bringing the total loss to 188,600 marks. In 1932 the firm showed a loss of 220,600 marks, which was reduced to 154,300 marks, in 1933 because the principal shareholder decided to forego claims amounting to 150,000 marks; while a profit of 60,000 marks on exchange rates was included in the calculation.

Lehmann & Voss & Co., m. b. H., Hamburg, has been changed from a limited liability company to an open partnership to be known as Lehmann & Voss & Co. The partners are Helmuth Friedrich Johannes Voss, Richard Carl Wilhelm Fromm, and Johannes Christian Friedrich Mau, merchants.

European Notes

At the annual meeting of the Belgian Association of Rubber Technologists, Brussels, June 25, M. Bary, one of the delegates from the French Society of Rubber Engineers, read a paper on "The Alpha and Beta Rubbers;" M. Bourgois presented a report on "The Possibilities of Standardization of Specifications for Blacks;" and M. Walter, also of France, described his apparatus for aging under the simultaneous (or separate, if desired), influence of oxygen (or other gases) under pressure; ultra-violet rays; humidity, and heat.

In the new process for making powdered rubber, invented by Age Meinesz, of Haarlem, Netherlands, pure latex without the addition of any protective colloid or filler whatsoever is sprayed in one of the usual methods, and the warm rubber particles, while still separate, are cooled to remove their tendency to adhere. Cooling is effected either by blowing a cold current of air against the descending rubber particles with such force as to cause the particles to come down slowly, or the particles can be brought in contact with sprayed or running cold water. In the latter instance, of course, the water will subsequently have to be removed by passing the rubber over an endless band provided with sieves and then drying it and loosening it by beating.

Another recent Dutch patent covers a process for improving binding materials for use in road surfacing, flooring, tiles, etc. Here cumarone resin and up to 40% of aliphatic bitumen are combined with chlorinated rubber or chlorinated rubber solution, the proportion of the rubber not exceeding that of the cumarone resin. The binders thus produced are plastic under prolonged and heavy pressures and elastic under lighter pressures of short duration. Roads, floors, and tiles made with these binding materials are perfectly resistant to water, it is claimed, and can also be colored as desired.

It is reported the Pepege rubber company, Graudenz, Poland, will reopen soon aided by British capital.

Three Polish rubber manufacturing concerns, the Gumma, Primeros, and Rygawar, have agreed to stop producing dipped goods in their own works and to form a separate company, the G.P.R. Zjednoczone Fabryki Wyrobow Gumowych w Polsce, to produce and sell these goods for all three firms. The new concern will also sell the products of the Magna company of Cracow. The latter firm, however, will continue to produce for its own account. The agreement between the firms runs to December 31, 1937, it is understood.

Kabelfabriken Norge A.S., Drammen, Norway, recently was formed with a capital of 200,000 kroner to manufacture cables and electric wires.

During the first half of 1935 Spain imported 3,720,288 kilos of crude rubber and rubber substitute against 3,640,908 kilos in 1934 and 2,012,694 kilos in 1933. Spain continues to import fair amounts of pieces cut from tires and tubes, mainly for use in making rubber soles, and in 1935 the quantity was 75,342 kilos against 77,450 kilos in 1934 and 32,173 kilos in 1933. Imports of unvulcanized rubber combined with cotton for the manufacture of cord tires have dwindled to insignificance and were only 487 kilos against 102,841 kilos in 1934 and 120,286 kilos in 1933. Also illustrative of the trend in the tire business in Spain is the steep decline in imports of tires and tubes from 1,170,295 kilos in 1933 to 527,843 kilos in 1934 and only 213,464 kilos in 1935. In 1935 tire exports spurted to 7,395 kilos from 218 in 1934. Imports of rubber footwear and accessories fell from 23,382 kilos in 1933 to 16,438 kilos in 1934 and 7,599 kilos in 1935. But exports of these goods dropped still more sharply and were only 8,659 kilos in 1935 against 42,487 kilos in 1934 and 40,533 kilos in 1933. The demand is good for hard rubber combs and hair ornaments, imports increasing from 11,922 in 1934 to 15,959 kilos in 1935, and also for sanitary goods, 4,078 kilos in 1935 compared with 2,682 in 1934. Business in mechanical goods has been very uneven the last few years: in 1935 imports of hose and packing rose to 35,614 kilos from 32,021 in 1934 and 29,307 in 1933; on the other hand exports of these articles, which had been well over 12,000 kilos in both 1933 and 1934, dropped to 2,200 kilos in 1935. Belting imports fell to 14,687 kilos in 1935 after having reached a record of 37,941 kilos in 1934.

Ryska Gummifabriks Aktiebolaget, Malmo, Sweden, changed its name to Aktiebolaget Tretorn, but the operation of the company continues as before. At the same time a new company was formed under the old name with the main object of selling Tretorn products.

British Malaya

An official cable from Singapore to the Malayan Information Agency, Malaya House, 57 Charing Cross, London, S.W.1, England, gives the following figures for September, 1935:

Rubber Exports: Ocean shipments from Singapore, Penang, Malacca, and Port Swettenham

	September, 1935	
To	Sheet and Crepe Rubber Tons	Latex, Concentrated Latex, Revertex, and Other Forms of Latex Tons
United Kingdom	8,052	404
United States	24,178	667
Continent of Europe	8,300	403
British possessions	5,020	46
Japan	3,378	11
Other countries	784	4
Totals	49,712	1,535

Rubber Imports: Actual, by Land and Sea

	September, 1935	
From	Dry Rubber Tons	Wet Rubber (Dry Weight) Tons
Sumatra	2,140	2,146
Dutch Borneo	1,543	321
Java and other Dutch islands	90	1
Sarawak	1,035	65
British Borneo	388	8
Burma	85	8
Siam	1,571	707
French Indo-China	139	64
Other countries	100	7
Totals	7,091	3,327

U. S. Exports Rise

United States exports of rubber products increased in value to $1,861,556 in August from $1,752,428 in July, a gain of 6.2%, against the usual seasonal increase of August over July of 1.7%. Total exports of rubber products for the first eight months of 1935 were valued at $14,623,158, 0.6% less than those for the same period of 1934 and 42.7% greater than for the 1933 months. Comparisons of exports of groups of rubber products follow: tires, inner tubes, and tire repair materials, from $8,502,215 in the eight months of 1934 to $7,744,622 in the 1935 period, a 9% loss; rubber shoes, boots, and heels and soles, from $411,158 to $596,086, a 45% increase; rubber belting, hose, packing, and general mechanical rubber goods, from $1,950,386 to $2,104,450, an 8% increase; rubberized fabrics, hospital sheeting, and piece goods, from $516,815 to $482,385, a 7% loss; druggists' rubber sundries, specialties, from $844,323 to $818,807, 3% loss; hard rubber goods, from $192,020 to $245,768, 28% increase; semi-manufactured goods, from $1,467,436 to $1,529,849, 4% increase; other rubber products, from $823,255 to $1,101,191, 34% increase.

Rubber Industry in Far East

MALAYA

Effects of Restriction

In his report on the working of the Rubber Regulation Scheme in Singapore and Penang during the period June 1, 1934, to June 30, 1935, J. I. Miller, registrar-general of statistics, Straits Settlements and Federated Malay States, noted the progressive increase in the proportion of dry unsmoked sheet in the shipments arriving from native areas in Netherland India. Total figures for all Netherland India in the first half of 1934 showed the proportion of wet rubber to dry was 82%, but during the first half of 1935 this had declined to 56%. The greatest decline in wet rubber took place in the Borneo shipments, from 82 to 37%; for Sumatra the decrease was from 86 to 68%. According to Mr. Miller's figures, Djambi, formerly notorious for its wet rubber, exported 64% wet in 1935 against 94% in 1934; the natives in the Palembang districts of Sumatra seem to be slowest in changing over from wet to dry rubber, for the percentage of wet rubber in 1935 is 87 against 95 the year before.

Remillers are, of course, feeling the effects of this change. Whereas the number of mills in December, 1933, was eighteen, at the end of June, 1935, this was thirteen, including two new factories. However, although more dry rubber is entering Singapore and Penang, much of it is unsmoked, so the number of smoke-houses has increased in Singapore from thirteen in December, 1933, to thirty in June, 1935, and in Penang from eleven to fourteen.

The dry unsmoked sheet is imported in bales and bundles, chiefly from Netherland India and Siam, and is washed, smoked, and graded, and then sold to the exporting dealers. Rubber so treated is said to obtain a better price than the blanket crepe into which the wet sheet was usually milled.

Besides the greater arrivals of unsmoked dry sheet, imports of blanket crepe milled in the producing countries have gained; while their monthly average was 387 tons in 1933, it rose to 1,236 in 1934 and to 1,440 tons in the first half of 1935. It is to be noted that imports from countries outside of Netherland India have risen markedly.

When restriction was announced, it was feared in some quarters that remilling, marketing, and shipping of native rubber would largely be diverted to Netherlands territory to the detriment of Singapore and Penang. But Mr. Miller's survey shows that while remillers have certainly suffered loss, this to some extent has been offset by the increased demand for smoking. As to marketing and shipping, Singapore has suffered very little, if at all; for the total imports of rubber, given in dry weight, were 105,000 tons for the first half of 1935 against 211,000 tons for the whole of 1934 and 128,000 tons for 1933.

The Stocks Situation

Although business has improved in Malaya because of better prices following restriction, the stocks situation continues a sore point, and to those who judge the value of restriction by the stocks the results have not been encouraging. Victor Lowinger's recent statement regarding the reduction of stocks at the rate of 200,000 tons a year after July, 1935, may have comforted some, but to the skeptical and disappointed it has rather been a goad to examine the position more closely.

A planter writing to the *Straits Times*, quoting official stock figures in the *Bulletin of the International Rubber Regulation Committee*, sets forth the position at the end of 1935 as follows:

	Tons		
	At End of June, 1934	At End of June, 1935	Increase or Decrease
Total world's stocks outside regulated areas, including afloat	649,728	647,579	— 2,149
Total world's stocks inside regulated areas, on estates and with dealers.	27,811	70,000	+42,189
Total world's stocks	677,539	717,579	+40,040

These figures show that so far from stocks being reduced as a result of one year of restriction, they have actually increased around 40,000 tons. The writer remarks caustically:

"The average rate of restriction during the above period was approximately 21% of standard production. If 21% restriction produces an increase in stocks of 40,000 tons in 12 months, perhaps Mr. Lowinger, or some other wizard at figures, will tell us what rate of restriction will have to be enforced to reduce stocks 100,000 tons by the end of 1935, or 200,000 tons by the end of June, 1936, and whether either of these is likely to be possible?"

To be sure the writer is against restriction and may therefore be considered somewhat prejudiced, but even in Mincing Lane it is felt that Mr. Lowinger was over-optimistic.

Lagging Budgrafting?

Circular No. 3,588, U. S. Department of Commerce, reports that the Singapore *Free Press* comments on the recent speech by E. Macfayden, chairman of Harrison & Crosfields' experimental rubber estate in Malaya, in which he pointed out that with an average London rubber price of 6d. per pound the typical non-budded plantation would secure a net profit of only £3/5/- per acre per year, whereas a modern budgrafted estate would earn an annual profit of £21/10/- per acre. The correspondent says that he gathers that Malayan and Ceylon rubber growers are lagging far behind their Netherland India and French Indo-China competitors in the matter of budding, the estimated budded area of Malaya being not more than 5% of the total planted area.

In connection with this, it is interesting to note from the recent figures compiled in the "Rubber Statistics Handbook of Malaya" that at the end of 1934 the total acreage planted in rubber in this country was 3,303,823 acres, of which 204,691 acres, or 6%, were budgrafted. Reports from Netherland India and French Indo-China indicate that their budgrafted areas are 10 and 28% of the total, respectively. The International Restriction Scheme permits replanting during the scheme of one-fifth of the area under rubber at the inauguration of the plan.

Netherland India

Available figures for total rubber exports show that August shipments were just one ton under those for July, 21,324 against 21,325 tons. If there is no change worth noting in the totals, the sources are a different matter. While estate rubber decreased substantially against July, this reduction was just about equalled by increased native exports. Estate shipments from Java were 4,666 against 5,999 tons; from Sumatra, 6,903 against 7,099 tons, in all 11,569 against 13,098 tons; while native rubber shipments were 9,755 against 8,227 tons. The excess exports from Netherland India, due to native rubber shipments, now amount to around 25,000 tons, and the question being asked is how is the Government going to work off this surplus before the end of the year.

The special export duty, 10½ guilder cents per half kilo, was raised to 11 cents starting September 30, 1935. Some think that this rise will hardly

be sufficient to reduce native shipments to the proper limits. The *Bat. Nbld.*, viewing the matter rather pessimistically, finds there is nothing left for the Government but to raise the duty steeply or else to stop native exports altogether during the last quarter; it admits that the latter step could only be a desperate last resort.

The *Alg. Handelsblad,* Amsterdam, takes a more cheerful view. To the end of August, Netherland India exported all but 67,842 tons of rubber; the average exportable allowance of the remaining four months therefore is about 17,000 tons. Normally estates would be allowed to export 12,000 tons and still remain well within their rights; but then barely 5,000 tons a month could be allowed the natives, which would make for trouble. But, says the paper, the Government could make use of the provision under article 5 (1) of the restriction agreement according to which permissible exports may be exceeded by 5% in any restriction year provided this amount is deducted from the permissible amount for the following year. Thus an additional 13,500 tons would become available for the last four months of 1935, and Government could allow native exports of 8,400 per month and still be loyal to its obligations. Of course matters would be simplified if current rumors as to the possibility of an upward revision in Netherland India quotas became fact.

Discussing these rumors, the paper in question points out that the International Rubber Regulation Committee has the power to change quotas from time to time, and as it has already done so for India and Burma, it could do something similar for Malaya and Netherland India. In fact, as far as the latter is concerned, such a revision would be no more than fair since export figures clearly show that although some allowance has been made for expansion of native planting since 1925, the potential output has yet been underestimated.

The government of Netherland India has accepted the De Hoog amendment to the measure providing for the levy of an export duty for fiscal purposes on estate rubber. The duty will not be collected when the price is under 18 guilder cents per half kilo; from 18 to 20 cents, the duty will be 1 cent per half kilo; from 20 to under 21 cents, 1¼ cents; and for every succeeding cent over 20 cents, the duty will be increased ¾ cent per half kilo.

Japan

The Dunlop Co., Kobe, it is understood, just completed erecting a new section for the direct manufacture of rubber goods from latex. Interest in this branch of manufacture seems to be spreading also in Japan, for another company is also experimenting in this direction.

India

The State Rubber Factory of Travancore at Travandrum was opened August 17 by the Maharaja of Travancore. Up-to-date machinery for the manufacture of motorcycle and cycle tubes, cycle and cart tires, hose, waterproof clothing, toys, and other articles has been installed, and production is to start at once. The state of Travancore has 95,800 acres under rubber, and there is an abundance of China clay so that the factory will have no difficulty in obtaining cheap supplies of these two essentials, at least.

Trade Commissioner George C. Howard, Calcutta, has reported that Bata is producing about 20,000 pairs of rubber footwear daily in its Indian factory, and that there are numerous small Indian enterprises which collectively may produce 30,000 pairs daily. One of these is the Supreme Rubber Co., Bombay, making 1,500 pairs daily, using Indian-produced rubber, and with a Japanese engineer. A bicycle and carriage tire factory at Karachi, known as the Lakshmi Rubber Works, has a capacity of 1,000 tires daily according to Consul Edward M. Groth, Karachi. In Rangoon are three small units making goods for use in rice mills, and reputed to use less than 1,000 pounds of rubber monthly. One tire retreading plant is operated at Calcutta and another at Bombay, according to Vice Consul N. Lancaster, Jr., who is stationed in that city.

During the three months ended June, 1935, India's imports of rubber goods fell considerably as compared with the corresponding period of 1934. Pneumatic covers for automobiles declined from 89,246, value 3,140,000 rupees, to 58,276 covers, value 2,680,000 rupees. All supplying countries suffered in this decline except Germany, whose shipments showed a fair increase. Imports of pneumatic covers for motorcycles were less than half, 507 against 1,132 covers; pneumatic tires for cycles numbered 328,308 against 334,696, although there was a slight increase in the value of these goods. Solid tires for automobiles alone showed an increase both in number and value, from 919 covers, value 76,000 rupees, to 976, value 80,000 rupees. Footwear imports again declined considerably; those from Japan were 659,896 pairs, value 360,000 rupees, against 991,077 pairs, value 510,000 rupees. Imports from the United Kingdom were practically unchanged at around 35,500 pairs, value 160,000 rupees; arrivals from Czechoslovakia dropped from 82,990 pairs, value 200,000 rupees, to 77,125 pairs, value 180,000 rupees.

South Africa

The Firestone Tire & Rubber Co., Akron, O., U. S. A., is reported planning a tire factory at Port Elizabeth, a seaport on the southern coast of the Cape Province. This will be the second important tire firm to establish a factory in South Africa, for Dunlop recently completed a plant at Durban, Natal, where production just commenced.

Incidentally, imports of tires and tubes during the first quarter of 1935 were cut almost in half as compared with the same period of 1934 and came to 2,387,787 pounds, value £116,663, against 4,147,057 pounds, value £180,635 in 1934.

New Zealand

Two important American tire manufacturers, Goodyear and Goodrich, are said to be considering establishing tire factories in New Zealand. According to last reports, J. J. Newman, vice president of B. F. Goodrich Co., Akron, O., U. S. A., and J. L. McKnight, counsel and assistant secretary of the company, were in New Zealand and intend going on to Australia.

Statement of "India Rubber World"

Statement of the ownership, management, circulation, etc., required by the Act of Congress, Act of March 3, 1933, of India Rubber World, published monthly at New York, N. Y., for October 1, 1935.

State of New York } ss.
County of New York }

Before me, a notary public in and for the state and county aforesaid, personally appeared B. Brittain Wilson, who, having been duly sworn according to law, deposes and says that he is the Business Manager of India Rubber World and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: publisher, Bill Brothers Publishing Corp., 420 Lexington Ave., New York, N. Y.; editor, D. C. McRoberts, 420 Lexington Ave., New York, N. Y.; managing editor, D. C. McRoberts, 420 Lexington Ave., New York, N. Y.; business manager, B. Brittain Wilson, 420 Lexington Ave., New York, N. Y.

2. That the owner is: Bill Brothers Publishing Corp., Caroline L. Bill, Raymond Bill, Edward Lyman Bill, and Randolph Brown, all located at 420 Lexington Ave., New York, N. Y.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1% or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company, but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

B. Brittain Wilson,
Business Manager.

Sworn to and subscribed before me this 30th day of September, 1935.

[seal] Wm. A. Low.

Notary Public Queens Co. No. 973. Reg. No. 5442. Certificate filed in N. Y. Co. No. 665, Reg. No. 7L382.

(Commission expires March 30, 1937.)

Patents and Trade Marks

MACHINERY

United States

2,011,585. **Rubber Cylinder Trimmer.** W. A. Lippincott, Oak Park, assignor to Ideal Roller & Mfg. Co., Chicago, both in Ill.

2,011,685. **Rubber Mill.** C. E. Maynard, Northampton, Mass., assignor, by mesne assignments, to Fisk Rubber Corp., a corporation of Del.

2,012,118. **Winder.** J. A. Cameron, assignor to Cameron Machine Co., both of Brooklyn, N. Y.

2,012,565. **Tube Splicer.** R. D. Hulslander, assignor to Firestone Tire & Rubber Co., both of Akron, O.

2,012,762. **Impregnated Textile Imperviousness Tester.** R. Kern, Oschatz, assignor to Chemische Fabrik R. Baumheier A. G., Zschollau, both in Germany.

2,012,927. **Relief Patterned Goods Mold.** P. Hansen, Hamburg, Germany, assignor, by mesne assignments, to I. B. Kleinert Rubber Co., New York, N. Y.

2,013,234. **Tire Groover.** D. E. Campbell, Detroit, Mich.

2,013,242. **Conveyer.** H. S. Johns, N. Grimsby Township, assignor to Bancroft Holdings, Ltd., Hamilton, both in Ont., Canada.

2,013,320. **Container Cap Apparatus.** McC. Shank and H. J. Flikkie, both of Akron, O., assignors to B. F. Goodrich Co., New York, N. Y.

2,013,339. **Ornamentation Apparatus.** R. S. Colley, Kent, O., assignor to B. F. Goodrich Co., New York, N. Y.

2,013,344. **Stretchable Sheet Material Manipulator.** F. D. Fowler, Newton, assignor to Hood Rubber Co., Inc., Watertown, both in Mass.

2,013,404. **Wire Vulcanizer.** G. L. Cherry, La Grange Ill., assignor to Western Electric Co., Inc., New York, N. Y.

2,013,553. **Fiber-Rubber Product Apparatus.** M. R. Day, Watertown, assignor to Dewey & Almy Chemical Co., Cambridge, both in Mass.

2,013,587. **Hydraulic Press.** T. F. Stacy, assignor to French Oil Mill Machinery Co., both of Piqua, O.

2,013,684. **Rubber Tube Mandrel.** F. Capella-Dalmau, Barcelona, Spain.

2,013,949. **Rubber Die.** S. C. Clark, Pontiac, Mich., assignor to Baldwin Rubber Co., a corporation of Mich.

2,014,010. **Retreader.** G. Wheatley, Milwaukee, Wis., assignor to Akron Standard Mold Co., Akron, O.

2,014,332. **Tire Vulcanizer.** H. I. Houlette, assignor to Pharis Tire & Rubber Co., both of Newark, O.

2,014,357. **Recording Micrometer Gage.** W. B. Klemperer, assignor to Goodyear-Zeppelin Corp., both of Akron, O.

2,014,359. **Tire Bead Apparatus.** L. E. Morrison, New York, N. Y., assignor to Wingfoot Corp., Wilmington, Del.

2,014,391. **Shoe Adhesive Applier.** W. L. MacKenzie, Beverly, Mass., assignor to United Shoe Machinery Corp., Paterson, N. J.

2,014,468. **Hollow Article Continuous Mold.** L. J. Clayton, assignor to Viceroy Mfg. Co., Ltd., both of Toronto, Ont., Canada.

2,014,472. **Outersole Solvent Applicator.** J. W. French, Beverly, Mass., assignors to United Shoe Machinery Corp., Paterson, N. J.

2,014,669. **Rubber Tube Apparatus.** F. T. Roberts, Ridgewood, N. J., assignor to F. A. Daly, Pawtucket, R. I., trustee.

2,014,998. **Thread Thickness Tester.** N. G. Baguley, Kenilworth, and C. F. Topham and T. B. Lewis, both of Coventry, assignors to Courtaulds, Ltd., London, all in England.

Dominion of Canada

352,566. **Tire Tool.** H. G. Hand, Fort Myers, Fla., U. S. A.

352,575. **Ball Former.** A. C. Munro, Britannia Beach, B. C.

352,642. **Shoe Shaper.** Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of H. W. Wolfhard and F. G. Meunier, co-inventors, both of Kitchener, Ont.

352,663. **Artificial Sponge Apparatus.** International Latex Processes, Ltd., St. Peter's Port, Channel Islands, assignee of R. Stangel, Matyasfold, Hungary.

352,828. **Tire Antiskidding Demonstrator.** Wingfoot Corp., Wilmington, Del., assignee of W. J. Lee, Cuyahoga Falls, O., both in the U. S. A.

352,849. **Tire Tube Apparatus.** P. R. Booth, Birmingham, England.

352,927. **Suction Apparatus.** Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of F. L. Barstow, Springfield, Mass., U. S. A.

352,941. **Rubber Strip Apparatus.** International Latex Processes, Ltd., St. Peter's Port, Channel Islands, assignee of J. R. Gammeter, Akron, O., U. S. A.

352,960. **Cable Vulcanizer.** Western Electric Co., Inc., New York, N. Y., assignee of A. R. Kemp, Westwood, N. J., both in the U. S. A.

PROCESS

United States

2,011,563. **Gasket.** G. T. Balfe, assignor to Detroit Gasket & Mfg. Co., both of Detroit, Mich.

2,011,915. **Friction Facing Material.** W. R. Seigle, Mamaroneck, assignor to Johns-Manville Corp., New York, both in N. Y.

2,012,102. **Winding Flexible Material.** R. McC. Johnstone, Short Hills, N. J., assignor to Cameron Machine Co., Brooklyn, N. Y.

2,012,172. **Half-Sole or Heel Lift.** R. Mitchell, La Fayette, Ind.

2,012,283. **Restoring Pressure in Tennis Balls.** G. Miller, New Haven, Conn.

2,012,753. **Rubber Goods Edging.** F. G. Chase, assignor to Plymouth Rubber Co., Inc., both of Canton, Mass.

2,012,929. **Floor Covering.** R. G. Knowland, Pelham, N. Y., assignor to Bigelow-Sanford Carpet Co., Inc., Thompsonville, Conn.

2,013,211. **Extensible Electric Conductor.** K. Herkenberg, Oberbarmen-Heckinghausen, Germany.

2,013,333. **Oil Seal.** E. H. Anderson, Forestville, Conn., assignor to Graton & Knight Co., Worcester, Mass.

2,013,341. **Shoe.** K. Engel, Lynn, Mass., assignor to United Shoe Machinery Corp., Paterson, N. J.

2,013,343. **Canning Foods.** E. E. Follin, assignor to Standard Oil Co., both of Chicago, Ill.

2,013,472. **Decorated Hard Surface Covering.** J. C. McCarthy, assignor to Armstrong Cork Co., both of Lancaster, Pa.

2,014,107. **Printing Roll.** L. H. Harrison, New York, N. Y.

2,014,253. **Rubber Article.** W. Kay, Bury, England, assignor to Kaysam Corp. of America, Dover, Del.

2,014,891. **Shoe.** H. B. Gorman, Lynchburg, Va., assignor to United Shoe Machinery Corp., Paterson, N. J.

2,015,006. **Storage Battery Separator.** J. Ekisler, assignor to M. Pagenel, both of Paris, France.

Dominion of Canada

352,643. **Gaiter.** Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of C. A. Ostling, New York, N. Y., and F. Zonino, Naugatuck, Conn., co-inventors, both in the U. S. A.

352,660. **Carpet.** International Latex Processes, Ltd., St. Peter's Port, Channel Islands, assignee of A. W. Holmberg, Naugatuck, Conn., U. S. A.

352,661. **Rubber Article.** International Latex Processes, Ltd., St. Peter's Port, Channel Islands, assignee of F. W. Warren, Manchester, England.

352,662. **Leather-Rubber Material.** International Latex Processes, Ltd., St. Peter's Port, Channel Islands, assignee of D. E. Cable, Rutherford, N. J., U. S. A.

352,664. **Play Ball.** International Latex Processes, Ltd., St. Peter's Port, Channel Islands, assignee of D. F. Twiss and W. McCowan, co-inventors, both of Birmingham, England.

352,795. **Rubber Article.** I. B. Kleinert Rubber Co., New York, assignee of R. H. Guinzburg, Flushing, both in N. Y., U. S. A.

352,827. **Pearlescent Effect Product.** Wingfoot Corp., Wilmington, Del., assignee of H. R. Thies and T. A. Riehl, co-inventors, both of Akron, O., all in the U. S. A.

352,829. **Curing Tires.** Wingfoot Corp., Wilmington, Del., assignee of H. A. Freeman, Akron, O., both in the U. S. A.

352,868. **Porous Rubberized Fabric.** P. H. Head, Attenborough, England.

352,910. **Waterproof Fuse.** Canadian Industries, Ltd., Montreal, P. Q., assignee of J. S. B. Fleming, Ardrossan, and R. McD. Freer, Saltcoats, co-inventors, both in Scotland.

352,921. **Abrasive Article.** Carborundum Co., assignee of C. S. Nelson and D. B. Sharpe, co-inventors, all of Niagara Falls, N. Y., U. S. A.

352,942. **Spreading and Extruding.** International Latex Processes, Ltd., St. Peter's Port, Channel Islands, assignee of F. R. Chappell, Brooklyn, N. Y., U. S. A.

353,098. **Fastener Slider.** Lightning Fastener Co., Ltd., St. Catharines, Ont., assignee of G. Sundback, Meadville, Pa., U. S. A.

CHEMICAL

United States

2,011,726. **Textile Fiber Treatment.** O. F. Muller, Glen Ridge, N. J.

2,011,952. **Age Resister.** R. L. Sibley, Nitro, W. Va., assignor to Rubber Service Laboratories Co., Akron, O.

2,012,347. **Olefine-Polysulphide Plastic.** J. C. Patrick, Kansas City, Mo.

2,012,727. **Rubber Composition.** E. A. Murphy, Erdington, and D. F. Twiss, Wylde Green, both in England, assignors to Dunlop Rubber Co., Ltd., a British corporation.

2,012,823. **Pigment.** C. R. Park, Cuyahoga Falls, assignor to Firestone Tire & Rubber Co., Akron, both in O.

2,013,117. **Accelerator.** W. F. Tuley, Nutley, N. J., assignor, by mesne assignments, to United States Rubber Co., New York, N. Y.

2,013,203. **Accelerator.** W. N. Davis and M. M. Holm, both of Berkeley, assignors to Standard Oil Co. of California, San Francisco, all in Calif.

2,013,319. **Rubber Composition.** W. L. Semon, Cuyahoga Falls, O., assignor to B. F. Goodrich Co., New York, N. Y.

2,013,336. **Chlorinated Rubber Composition.** R. D. Bonney, Glen Ridge, and W. S. Egge, W. Orange, both in N. J., assignors to Congoleum-Nairn, Inc., a corporation of N. Y.

2,013,651. **Latex Composition.** B. F. Erdahl, Duluth, Minn.

2,013,670. **Latex Compound for Lining Can Ends.** J. E. Robinson, Glen Ellyn, Ill., assignor to American Can Co., New York, N. Y.

2,013,699. **Carbon Black.** R. S. Richardson, Teaneck, N. J., assignor to Chemical Construction Corp., New York, N. Y.

2,013,774 and 2,013,775. **Carbon Black.** W. B. Wiegand, Sound Beach, Conn.

2,014,198. **Chemical Product.** E. K. Bolton and O. M. Hayden, assignors to E. I. du Pont de Nemours & Co., all of Wilmington, Del.

2,014,353. **Thiuram Disulphide.** H. I. Cramer, Cuyahoga Falls, O., assignor to Wingfoot Corp., Wilmington, Del.

2,014,421. **Accelerator.** W. Baird, Blackley, England, assignor to Imperial Chemical Industries, Ltd., a corporation of Great Britain.

2,014,504. **Chlorinated Rubber.** L. Orthner, Leverkusen-I. G. Werk, W. Becker, Cologne-Mulheim, and L. Rosenthal, Leverkusen-Wiesdorf, assignors to I. G. Farbenindustrie A. G., Frankfurt a. M., all in Germany.

Dominion of Canada

352,457. **Vulcanizing Inhibitor.** Canadian Industries, Ltd., Montreal, P. Q., assignee of C. S. Williams, Perth Amboy, N. J., U. S. A.

352,472. **Accelerator.** Canadian Industries, Ltd., assignee of G. S. Whitby, both of Montreal, P. Q.

352,534. **Accelerator.** R. T. Vanderbilt Co., Inc., New York, N. Y., assignee of P. I. Murrill, E. Norwalk, Conn., both in the U. S. A.

352,659. **Rubber Composition.** International Latex Processes, Ltd., St. Peter's Port, Channel Islands, assignee of E. A. Murphy, Birmingham, England.

352,789. **Contact Catalyst.** Goodyear Tire & Rubber Co., Akron, O., assignee of H. Adkins, Madison, Wis., both in the U. S. A.

352,830. **Processing Rubber.** Wingfoot Corp., Wilmington, Del., assignee of L. B. Sebrell, Silver Lake, O., both in the U. S. A.

352,841. **Latex Coagulation.** Dewey & Almy Chemical Co., N. Cambridge, assignee of S. B. Neiley, Winchester, both in Mass., U. S. A.

353,115. **Age Resister.** Rubber Service Laboratories Co., Akron, O., assignee of J. R. Ingram, Nitro, W. Va., both in the U. S. A.

GENERAL

United States

19,678 (Reissue). **Abrasive Wheel.** R. C. Benner and H. E. Stowell, assignors to Carborundum Co., all of Niagara Falls, N. Y.

19,696 (Reissue). **Massager.** P. L. Hemp, assignor to Conley Co., Inc., both of Rochester, Minn.

2,011,562. **Inflatable Ball Valve.** C. J. Crowley, assignor to Seamless Rubber Co., Inc., both of New Haven, Conn.

2,011,714. **Creator Kit.** L. G. Friedman, Greenwich, assignor to N. Littell, New Canaan, both in Conn.

2,011,733. **Respirator Mask.** H. F. Shindel, assignor to Willson Products, Inc., both of Reading, Pa.

2,011,749. **Game.** H. M. Brading, Evansville, Ind.

2,011,760. **Game Ball Antiskid Device.** M. Gallinant, Ridgefield Park, N. J., assignor of ½ to A. J. Bergman, Chevy Chase, Md.

2,011,781. **Flexible Pipe.** G. Tabozzi, Milan, Italy.

2,011,795. **Shoulder Strap.** W. Caplin, Bronx, assignor to Aronson-Caplin Co., Inc., New York, both in N. Y.

2,011,817. **Vehicle Flexible Coupling.** H. S. Littlefield, San Bernardino, Calif.

2,011,832. **Cold Pack.** C. F. Slater, Pittsburgh, Pa.

2,011,842. **Saddle.** J. W. Brandt, assignor to Troxel Mfg. Co., both of Elyria, O.

2,011,849. **Freezing Tray.** R. H. Chilton, Dayton, O., assignor, by mesne assignments, to General Motors Corp., Detroit, Mich.

2,011,861. **Terminal Post.** T. Knümann, Essen, Germany.

2,012,002. **Soundproof Clock Case.** C. Finch, W. Palm Beach, Fla.

2,012,008. **Resiliently Mounted Wheel.** A. F. Hickman, assignor to Hickman Pneumatic Seat Co., Inc., both of Eden, N. Y.

2,012,012. **Power Transmission Link.** G. G. Kitzman, assignor to Monad Corp., both of Chicago, Ill.

2,012,036. **Electric Receptacle.** H. J. Cook, Torrington, assignor to Connecticut Products Corp., Bridgeport, both in Conn.

2,012,042. **Cushion.** C. H. Gerlofson and T. J. Nelson, both of Chicago, Ill.

2,012,058. **Rubber Band Package.** K. R. Shaw, assignor to Easthampton Rubber Thread Co., both of Easthampton, Mass.

2,012,060. **Doll.** M. Wittmann, New York, N. Y.

2,012,071. **Belt Connector.** C. M. Rhoades, assignor to Dayton Rubber Mfg. Co., both of Dayton, O.

2,012,126. **Submarine Signaling Cable.** J. J. Gilbert, Douglaston, assignor to Bell Telephone Laboratories, Inc., New York, both in N. Y.

2,012,158. **Baton and Cane.** C. L. Dewey, Elkhart, Ind.

2,012,173. **Rubber Heel Patching Lift.** A. L. Murray, Auburn, Ind.

2,012,211. **Inflatable Spiral Tube.** S. Willig, Akron, O.

2,012,223. **Textile Fiber Working Unit.** R. W. Cutler, Boston, Mass.

2,012,240. **Waterproof Textile Material.** G. Cogno, Torino, Italy.

2,012,254. **Windshield Cleaner.** J. R. Oishei, assignor to Trico Products Corp., both of Buffalo, N. Y.

2,012,260. **Rail Vehicle.** C. de Saint-Martin, Paris, assignor to Michelin & Cie., Clermont-Ferrand, both in France.

2,012,272. **Shoe Supporting Pad.** S. J. Finn, Beverly, Mass., assignor to United Shoe Machinery Corp., Paterson, N. J.

2,012,282. **Platen Roll.** A. W. Metzner, assignor to Standard Register Co., both of Dayton, O.

2,012,295. **Transmission Cable.** H. E. Allen, Collingswood, N. J., assignor to Radio Corp. of America, a corporation of Del.

2,012,311. **Arch Support.** J. C. Howell, Fort Lee, N. J.

2,012,313. **Windscreen Wiper.** R. P. Lark, Wallington, and F. Young, London, both in England.

2,012,369. **Rail Vehicle Resilient Wheel.** L. Bacqueyrisse, Paris, France.

2,012,376. **Ball.** M. Caro, Brussels, Belgium.

2,012,410. **Head Rest Reproducer.** A. K. Ward, Audubon, N. J., assignor to Radio Corp. of America, a corporation of Del.

2,012,441. **Respirator Mask.** F. Willson, Bern Township, and H. F. Shindel, Reading, assignors to Willson Products, Inc., Reading, all in Pa.

2,012,522. **Inhalant Dispenser.** L. C. Schiff, Ashville, O.

2,012,540. **Tire Gage.** A. S. Marchus, Oakland, Calif.

2,012,649. **Heel.** M. Yamaki, Sanno, Omori-ku, Tokyo-shi, Japan.

2,012,707. **Hose Supporter Grip.** J. M. Bodensiek, New York, N. Y.

2,012,742. **Life Saver.** G. A. Evenden and G. F. Wilson, both of Hamilton, Ont., Canada.

2,012,755. **Surgical Dressing.** O. De Muth, Vancouver, B. C., Canada.

2,012,773. **Tire Pressure Control.** J. Rockman, Sayre, Pa.

2,012,804. **Windshield Cleaner.** B. A. Bean, Jr., Williamsville, assignor to Trico Products Corp., Buffalo, N. Y.

2,012,814. **Transparent Body Wiper.** J. H. Herzog, Laurelton, N. Y.

2,012,879. **Undergarment.** A. R. Kneibler, assignor to Coopers, Inc., both of Kenosha, Wis.

2,012,926. **Window Antirattler.** H. Golden, assignor to Magna Products Corp., both of New York, N. Y.

2,012,935. **Vulcanizable Patch.** H. W. Smith and J. E. McCarty, assignors to Kelly-Springfield Tire Co., all of Cumberland, Md.

Dominion of Canada

351,427. **Life Saver.** G. A. Evenden and G. F. Wilson, co-inventors, both of Hamilton, Ont.

351,454. **Garment Lining.** F. Jones, Toronto, Ont.

351,513. **Electric Connector.** Canadian General Electric Co., Ltd., Toronto, Ont., assignee of N. H. Watts, Bridgeport, Conn., U. S. A.

351,536. **Cabinet Washing Machine.** Electric Household Utilities Corp., assignee of J. T. Hume, both of Chicago, Ill., U. S. A.

351,547. **Machinery Packing.** Garlock Packing Co., assignee of C. R. Hubbard, both of Palmyra, N. Y., U. S. A.

351,548 and 351,549. **Oil Sealer.** Garlock Packing Co., assignee of C. R. Hubbard and R. M. Waples, co-inventors, all of Palmyra, N. Y., U. S. A.

351,558. **Fastener Slider.** Lightning Fastener Co., Ltd., assignee of G. Dahlin, both of St. Catharines, Ont.

351,559. **Separable Fastener.** Lightning Fastener Co., Ltd., St. Catharines, Ont., assignee of E. O. Seaver, Meadville, Pa., U. S. A.

351,630. **Buoyant Clothing.** W. Milne, Nooklands, Dumbarton, Scotland.

351,631. **Curler.** R. McC. McFadden, Glendale, Calif., U. S. A.

351,640. **Chair Foot.** G. D. Schermerhorn, Reading, Mich., U. S. A.

351,643. **Tread and Antiskid Chain.** A. Trudeau, Montreal, P. Q.

351,753. **Drain Cleaner.** C. B. Christie, Wichita Falls, Tex., U. S. A.

351,772. **Drain Joint.** A. Lebrun, Waterloo, P. Q.

351,824. **Inflatable Mattress.** P. B. Cow & Co., Ltd., assignee of C. R. Coomber, both of London, England.

351,841. **Electric Cable.** General Cable Corp., New York, N. Y., assignee of E. W. McKnight, Bayonne, N. J., both in the U. S. A.

351,844. **Connecting Link.** Houde Engineering Corp., assignee of C. F. Lautz, both of Buffalo, N. Y., U. S. A.

351,866. **Candy and Holder.** Parker-Meyer-Dennis Co., Dubuque, Iowa, assignee of C. Parker, assignee of G. J. Guyon, both of Chicago, Ill., all in the U. S. A.

351,867. **Solidified Edible.** Parker-Meyer-Dennis Co., Dubuque, Iowa, assignee of C. Parker, Chicago, Ill., both in the U. S. A.

351,875. **Valve Core.** A. Schrader's Son, Inc., New York, assignee of S. T. Williams, Bellerose, L. I., both in N. Y., U. S. A.

351,892. **Telephone Apparatus.** Western Electric Co., Inc., New York, N. Y., U. S. A., assignee of L. Devaux, Paris, France.

351,926. **Extensible Electric Conductor.** K. Herkenberg, Oberbarmen-Heckinghausen, Germany.

351,944. **Horseshoe Caulk.** M. Mücklich, Dresden-N., Germany.

351,955. **Flusher.** S. Williamson, El Paso, Tex., U. S. A.

351,957. **Hat.** J. N. Wolf, Philadelphia, Pa., U. S. A.

351,979. **Multiple Cable.** Canadian General Electric Co., Ltd., Toronto, Ont., assignee of E. Kirch, Berlin-Oberschöneweide, Germany.

351,981. **Lamp Cord.** Canadian General Electric Co., Ltd., Toronto, Ont., assignee of E. H. Lewis, Bridgeport, Conn., U. S. A.

351,988. **Valve Stem.** Dill Mfg. Co., Cleveland, assignee of J. C. Crowley, Cleveland Heights, both in O., U. S. A.

351,989. **Tire Cord.** Drummondville Cotton Co., Ltd., assignee of J. W. Yaxley, both of Montreal, P. Q.

352,024. **Separable Fastener.** Lightning Fastener Co., Ltd., St. Catharines, Ont., assignee of G. Sundback, Meadville, Pa., U. S. A.

352,025. **Separable Fastener.** Lightning Fastener Co., Ltd., St. Catharines, Ont., assignee of H. E. Sipe, New York, N. Y., U. S. A.

352,057. **Windshield Heater.** Three Way Windshield Wiper Co., assignee of G. Herff, assignee of George Herff Co., assignee of G. Y. Lauchin, all of Milwaukee, Wis., U. S. A.

352,084. **Elastic Bed and Seat.** I., A., and H. Singer, co-inventors, all of Montreal, P. Q.

352,111. **Fountain Pen.** H. McL. Hutchison, Edmonton, Alta.

352,114. **Packing.** C. Kaiser, Heilbronn am Neckar, Germany.

352,122. **Foot Arch Support.** D. Locke, Montreal, P. Q.

352,228. **Typewriter.** L. C. Smith & Corona Typewriters, Inc., assignee of C. Gabrielson, both of Syracuse, N. Y., U. S. A.

352,242. **Power Transmission Belt.** Wingfoot Corp., Wilmington, Del., assignee of E. Kramp, Akron, O., both in the U. S. A.

352,257. **Shoe Tree.** J. F. and E. B. Clark, co-inventors, both of Toronto, Ont.

352,278. **Feeding Device.** F. Maccoy, Detroit, Mich., U. S. A.

352,413. **Tire.** J. G. Smith, assignee of A. H. Shoemaker, both of Seattle, Wash., U. S. A.

352,419. **Washing Machine.** A. A. Burry, Toronto, Ont.

352,424. **Sanitary Automatic Server.** E. P. Durand, Huntington, N. Y., U. S. A.

352,428. **Shaving Brush.** J. J. Gottschalk, Taunton, Mass., U. S. A.

352,437. **Propeller Driven Surface Machine.** K. E. Lorch, Spy Hill, Sask.

352,537. **Game Practicing Device.** H. C. Deane, co-inventor with and assignee of J. H. Naden, both of London, England.

United Kingdom

424,723. **Vehicle Spring Suspension.** Alvis Car & Engineering Co., Ltd., and G. T. Smith-Clarke, both of Coventry.

425,157. **Envelope.** F. Kroch, Leipzig, Germany.

426,016. **Cycle Mudguard.** A. G. Barrett and John Bull Rubber Co., Ltd., both of Leicester.

426,063. **Three-Wheeled Vehicle.** O. D. North, P. G. Hugh, and Scammell Lorries, Ltd., all of London.

426,134. **Aircraft Landing Gear.** Vickers (Aviation), Ltd., and B. N. Wallis, both of Surrey.

426,183. **Vehicle Pedal Controller.** H. Bergschicker, Leipzig, Germany.

426,184. **Loudspeaker Supporter.** General Electric Co., Ltd., London, and S. G. Hunter, Coventry.

426,206. **Well Elevator.** National Supply Corp., New York, N. Y., U. S. A., and Oil Well Engineering Co., Ltd., Stockport.

426,286. **Tractor-Trailer.** J. Coder, Marseilles, France.

426,344. **Compound Fabric.** J. Morton, Carlisle.

426,448. **Ship Fender.** S. Lake, Milford, Conn., U. S. A.

426,521. **Loom Picker.** Compagnie Generale D'Electricite, Paris, France.

426,545. **Small-Shot Cartridge.** F. H. Rogers, London. (R. T. Horganyhengermü, Vac, Hungary.)

426,562. **Windscreen Cleaner.** W. H. Howard, London.

426,603. **Sideboard.** E. Gurnell, Sewerby.

426,657. **Cycle Saddle.** H. and J. Jelley, both of Birmingham.

426,661. **Vehicle Lifeguard.** E. J. Buckingham, London.

426,704. **Vehicle Spring Suspension.** Dr. Ing. h. c. F. Porsche Ges., Stuttgart, Germany.

426,713. **Spray Producer.** Rotoplunge Pump Co., Ltd., London, and C. B. Walker, Banbury.

426,750. **Bath Seat.** G. H. Long, Dagenham, and H. G. Nunn, London.

426,775. **Suspenders.** E. G. Pullum, Edgware, and H. R. Gould, Chingford.

426,783. **Electromedical Appliance.** G. Oppenheim, Frankfurt a. M., Germany.

426,786. **Inflating Valve.** J. Benson, Hull, and Tuck & Co., Ltd., London.

426,805. **Bronze Ink.** J. Y. Johnson, London. (I. G. Farbenindustrie A. G., Frankfurt a. M., Germany.)

426,810. **Spring Upholstery.** M. A. Clarke, High Wycombe, and A. H. Russell, Bournemouth.

426,812. **Transmitter.** P. B. Healey and Telephone Mfg. Co., Ltd., both of London.

426,822. **Golf Practicing Appliance.** J. Youds, W. Kirby.

426,849. **Printing Surface.** N. E. Brookes, London. (Multigraph Co., Cleveland, O., U. S. A.)

426,854. **Gum Receptacle.** F. Sojka, Vaduz, Liechtenstein.

426,872. **Dress Display Stand.** F. Butwick, London.

426,891. **Float.** H. F. Anns, Westminster.

426,933. **Gas Holder.** B. Schafer, Frieda, Germany.

426,935. **Scalp Treater.** M. Kon, Brussels, Belgium.

426,938. **Tire Valve Coupling.** B. Walters, Sheffield.

426,959. **Cow Milker.** R. Wallace, Castle-Douglas, Scotland.

426,980. **Sanitary Knickers.** V. H. Dury, Cheadle.

426,983. **Motorcycle Saddle.** Veloce, Ltd., and H. J. Willis, Birmingham.

426,993. **Face Mask.** C. Wipler, Vienna, Austria.

426,996. **Visible Card Index.** W. Schmidtmann and W. Vossebrecker, both of Barmen, Germany.

427,024. **Phonographic Reproducer.** Electrical Research Products, Inc., New York, assignee of H. C. Harrison, Port Washington, both in N. Y., U. S. A.

427,091. **Displaying Device.** N. Sandor, Surbiton.

427,093. **Cathode Ray Tube.** S. Loewe, Berlin, Germany.

427,104. **Hinge.** V. A. Trier, London.

427,126. **Resilient Heel.** W. J. James, Glamorgan, Wales.

427,127. **Vehicle Lifeguard.** Safety Bumpers, Ltd., and V. J. Clifford, both of London.

427,140. **Bottling Machine Nozzle.** A. A. Gely, Paris, France.

427,142. **Raft.** E. E. Smithers and F. Knight, both of Sydney, Australia.

427,167. **Glove.** M. Ritchie, Liverpool.

427,174. **Massage Appliance.** W. F. Banham, London.
427,212. **Box.** Tailby & Co., Ltd., and W. May, both of Birmingham.
427,217. **Ankle Bandage.** P. G. H. Hinder, London.
427,222. **Bathing Cap Chin Strap.** H. C. North, London.
427,229. **Helical Spring.** A. Schrader's Son, Inc., Brooklyn, assignee of S. T. Williams, Bellerose, L. I., both in N. Y., U. S. A.
427,244. **Shock Absorber.** F. Faudi, Düsseldorf, Germany.
427,267. **Paper Machine.** Etablissements Cottereau Soc. Anon., Paris, France.
427,283. **Safety Razor.** R. Ern, The Hague, Netherlands, and K. F. Niepenberg, Solingen, Germany.
427,288. **Cycle Saddle.** H. and J. Jelley, both of Birmingham.
427,317. **Grooming Appliance.** F. Walters, Parkstone.
427,333. **Bottle Drip Catcher.** S. S. C. Probyn, London.
427,337. **Printing Press Blanket.** Behr-Manning Corp., Troy, N. Y., U. S. A.
427,349. **Massage Appliance.** L. R. Lacy, London.
427,361. **Sun Helmet.** J. E. Owen, Chingford.
427,367. **Gas Mask.** Accessorie De Precision, Levallois-Perret, France.
427,419. **Street Post.** Universal Rubber Paviors, Ltd., and L. Gaisman, both of Manchester.
427,440. **Electric Eraser.** E. W. C. Kearney, London.
427,456. **Swimming Appliance.** J. Van B. Bryson and J. R. Geddes, London.
427,478. **Golf Tee.** C. Fraser, Glasgow, Scotland.
427,482. **Railway Vehicle Undercarriage.** E. H. Piron, Detroit, Mich., U. S. A.
427,486. **Game.** J. P. Gowland, Woking.
427,492. **Kinematograph Apparatus.** Constructments, Ltd., and J. A. Maytum, both of London.
427,502. **Rope.** International Latex Processes, Ltd., St. Peter's Port, Channel Islands; S. A. Brazier and C. Hampson, both of Manchester; and M. Langstreth, Rochdale.
427,539. **Vehicle Driving Gear.** L. Thiry, Huy, Belgium.
427,547. **Braiding.** W. H. Price, Loughborough.
427,578. **Vehicle Spring Suspension.** Daimler-Benz A. G., Stuttgart, Germany.
427,620. **Refrigerator.** British Thomson-Houston Co., Ltd., London.
427,642. **Discharge Device.** T. E. Allibone, Sale; J. F. Smee, Alderley Edge; G. S. Innes, Lossiemouth; and Associated Electrical Industries, Ltd., London.
427,645. **Safety Razor.** G. Taylor, Preston.
427,667. **Game.** S. Chick, Southall.
427,672. **Ball Mill.** F. R. Barratt, Krugersdorp, Transvaal, South Africa.
427,675. **Bottle.** C. W. Barton, New York, N. Y., U. S. A.
427,687. **Stocking.** J. C. Eldridge, London.
427,690. **Ornamental Metalwork Spinner.** M. A. A. Lauren, Stockholm, Sweden.
427,705. **Pressure Gage.** M. E. A. Baule, Seine-et-Oise, France.
427,707. **Collapsible Tube Medicament Injector.** O. Seemin, Riga, Latvia.
427,718. **Cathode Ray Tube.** S. Loewe, Steglitz, and P. P. Fries, Charlottenburg, both in Germany.
427,739. **Railway Vehicle Undercarriage.** E. H. Piron, Detroit, Mich., U. S. A.
427,741. **Electric Animal Stunner.** H. T. White, London, and A. Tucker, Greenford.
427,759. **Stocking.** H. B. Snader, Reading, Pa., U. S. A.
427,767. **Cycle Handlebar.** E. Brown and F. Stott, both of Burnley.
427,769. **Sanitary Bin.** Fiat Soc. Anon., Turin, Italy.
427,770. **Spinning Pot.** British Thomson-Houston Co., Ltd., London.
427,833. **Reflector.** Stocal Enamels, Ltd., Birmingham, and W. S. Grainger, Burton-on-Trent.
427,906. **Heel Protector.** C. W. Clarke and T. Bird & Sons, Ltd., both of Kettering.
427,907. **Vehicle Spring Suspension.** G. Roesch and C. Talbot, Ltd., both of London.
427,947. **Horseshoe.** A. A. Thornton, London. (O. Harsem, Oslo, Norway.)
427,971. **Valve.** United Water Softeners, Ltd., and A. C. Inch, both of London.
428,006. **Stuffing Box Packing.** J. W. Watson, Philadelphia, and R. F. Nowalk, Oaklane, both in Pa., U. S. A.
428,033. **Apron.** Schiaparelli (London), Ltd., and E. Schiaparelli, both of London.
428,040. **Centrifugal Spinning Pot.** Comptoir Des Textiles Artificiels, Paris, France, assignee of P. E. Harrison, Donelson, Tenn., U. S. A.
428,063. **Flexible Ventilated Fabric.** Hood Rubber Co., Inc., Watertown, Mass., assignee of A. A. Glidden and V. H. Bodle.
428,088. **Boot.** D. M. Haig, Liverpool. (Perth Shoe Co., Ltd., Perth, Ont., Canada.)
428,113. **Trouser Creaser.** B. Vaughan, London.
428,127. **Sandal.** J. E. M. Cooke, London.
428,144. **Sound Receiver and Transmitter.** P. W. Willans, London.
428,167. **Adhesive Tape Holder.** L. Rado, Berlin, Germany.
428,186. **Sole.** Panther Rubber Co., Ltd., and C. A. Joslin, both of Sherbrooke, P. Q., Canada.
428,201. **Switch Case.** Felten & Guilleaume Carlswerk A. G., Cologne, Germany.
428,210. **Strainer.** Andale Co., Philadelphia, Pa., U. S. A., assignee of D. R. McNeal.
428,249. **Glove.** E. M. Ellis, London.
428,250. **Lavatory Basin.** Twyfords, Ltd., and E. H. Bailey, both of Hanley.
428,254. **Trouser Belt.** R. Blaser, Bremen, Germany.
428,259. **Respiratory Mask.** Soc. Italiana Pirelli, Milan, Italy.
428,281. **Massage Glove.** E. L. H. and E. L. H., Jr., Cosby, both of London.
428,306. **Radioactive Body Treater.** F. Koeller, Cologne, Germany.
428,309. **Respiratory Appliance.** L. R. Lacy, London.
428,339. **Trousers.** S. Simpson, Ltd., and A. Simpson, both of London.
428,403. **Animal Feeder.** W. L. Jones, Stratford-on-Avon.
428,404. **Dictating Machine.** L. Neumann and J. Boritzer, both of Vienna, Austria.
428,519. **Filter.** J. W. and T. D. Whitfield, (trading as Whitfield Bros.), and H. Chapman, all of Cadishead.
428,554. **Filter.** G. H. Gascoigne, Wokingham, and J. R. Knox, Reading.
428,659. **Tobacco Leaf Stripper.** A. A. Thornton, London. (Gough Stemming Machine Corp., Newark, N. J.
428,683. **Mowing Machine.** J. and C. J. Bamford, both of Uttoxeter.

TRADE MARKS

United States

326,516. **Gonads.** Prophylactic rubber articles. E. Gounah, doing business as Gounah Co., Houston, Tex.
326,543. **Hy-pure.** Prophylactic rubber articles. Hardy Newman & Co., Chicago, Ill.
326,544. Representation of three pirates in action on the high seas. and the words: **"3 Pirates."** Prophylactic rubber articles. Hardy Newman & Co., Chicago, Ill.
326,583. **Supreme.** Stationers' supplies including erasers. David Kahn, Inc., No. Bergen, N. J.
326,624. **Red Circle.** Erasers. Eagle Pencil Co., New York, N. Y.
326,637. Representation of a knocked-over basket of fruit, and the words: **"Perfect Seal."** Jar rings and rubbers. Schacnt Rubber Mfg. Co., Huntington, Ind.
326,667. **Thermo-block.** Brake blocks. Thermoid Rubber Co., Trenton, N. J.
326,700. Representation of a banner containing the letter: **"C"** between the words: **"Cornell Cavalcade."** Tires and tubes. The Pep Boys—Manny, Moe & Jack, doing business as Cornell Tire & Rubber Co., Philadelphia, Pa.
326,711. **Fabrix.** Mats. Fabrix, Inc., Chicago, Ill.
326,722. **Game O' Skeet.** Game. Parker Bros., Inc., Portland, Me.
326,742. **"Clincher."** Balls. J. de Beer & Son, Albany, N. Y.
326,783. **Hand E Hang.** Hot water bottles, fountain syringes, and combinations thereof. Seiberling Latex Products Co., Akron, O.
326,806. **Air-Flo.** Hot water bottles, fountain syringes, and combinations thereof. Seiberling Latex Products Co., Akron, O.
326,855. **Hexacord.** Insulated wire. Simplex Wire & Cable Co., Cambridge, Mass.
326,903. **Rubberset.** Brushes. Rubberset Co., New York, N. Y.
326,906. Fanciful design containing the word: **"Deane's."** Surgical dressings, etc. Deane Plaster Co., Yonkers, N. Y.
326,939. **Cryptone.** Pigments for rubber, etc. New Jersey Zinc Co., Newark, N. J.
326,988. **Permabak.** Impregnated fabric reenforcing material for laminated fabrics and backing materials. Acme Backing Corp., Brooklyn, N. Y.
326,996. **Exel=A=Tex.** Hospital supplies. H. L. Kaufmann, doing business as Henry L. Kaufmann & Co., Boston, Mass.
327,001. **Scentoy.** Dogs' imitation bones, balls, and rings. Maxwell Rubber Products Corp., Newark, N. J.
327,028. **Tubaspray.** Cut flowers rubber water holders. Tubaspray Co., Cincinnati, O.
327,051. **Samuel H. Moss Inc. Gold Label Index.** Rubber stamps. Samuel H. Moss, Inc., New York, N. Y.
327,105. **Oppanol.** Synthetic polymerization products. I. G. Farbenindustrie A. G., Frankfurt a. M., Germany.

(*Continued on page 76*)

Market Reviews

CRUDE RUBBER

Commodity Exchange

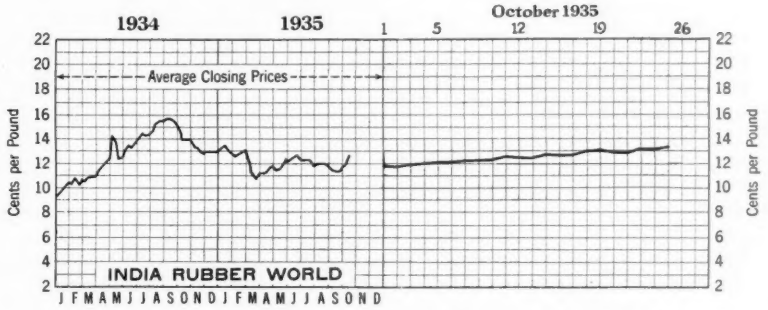
TABULATED WEEK-END CLOSING PRICES

Futures	Aug. 31	Sept. 28	Oct. 5	Oct. 12	Oct. 19	Oct. 26
Sept.	11.79	.....	.....	.....	.....	.....
Oct.	11.87	11.81	12.07	12.57	12.93	13.39
Dec.	12.04	11.97	12.25	12.74	13.07	13.49
Mar.	12.25	12.22	12.46	12.96	13.31	13.72
June	12.45	12.40	12.67	13.18	13.51	13.94
Aug.	.....	.....	12.54	12.79	13.32	13.64	14.06
Sept.	.....	.....	.....	12.86	13.39	13.71	14.13
Volume for week (tons)	9,490	8,590	6,310	8,650	15,850	19,370

THE above table gives the nearest first and last week-end closing prices of the month previous to that just closed, also the week-end closing prices of each week of last month up to time of going to press. This plan sets forth the general price trends in the briefest possible manner.

The price of rubber futures during September dipped because of the apparent ineffectiveness of restriction, but braced as the end of the month approached, first, on the supposition that the export quotas would be reduced, and second, because the I.R.R.C. definitely reduced the restricted rubber producing countries' quotas from 65% to 60% at their meeting September 24 in London. With more than 30 points net gain during the last week of the month September closed at approximately the same price level that it started, but had established a sustained upward trend.

October trading, while of moderate volume, at first increasing gradually as the period advanced, brought a continuation of this upward trend of prices. Some days producing price recessions were few in number as compared with those showing advanced prices; moreover the extent of the recessions was small as compared with that of the gains. Temporary setbacks due to such news as reduced tire prices to manufacturers, isolated reports of higher exports in August as compared with those of July than had been expected, and week-end foreign markets were quickly and substantially offset by news evidences that the reduced quotas set by I.R.R.C. would lower world stocks; that increased export taxes currently levied in Batavia and Netherland India would promptly reduce their shipments; that consumption in the United States during September was 24.1% over that of the same period in 1934; that renewed shipments to Russia were opening a new volume outlet; that war developments were stimulating all commodity activities; and that Netherland India had arranged to purchase 20,000 tons of export licenses further to restrict production to offset the 34,000 tons excess shipments already made.



New York Outside Market—Spot Closing Prices Ribbed Smoked Sheets

The automobile show scheduled for November this year has reflected its earlier than usual preparation, increasing the fall activity in tire production; the August figure was 3,992,800 casings, an increase of 13.1% above the same month last year, according to R.M.A. reports.

New York Outside Market

Following the same general price trend pattern made by the futures market, the price of No. 1 smoked sheets dipped from the beginning of September to the middle of the month, then started an upward trend which closed the month with losses recovered. The upward trend was likewise maintained through October, even though the demand was on only a moderate, yet steady, basis with a few daily exceptions. The week-end closing prices for the two consecutive months follow: August 31, 11 13/16¢; September 7, 11 7/8; September 14, 11¼; September 21, 11 5/8; September 28, 11 13/16; October 5, 12 7/8; October 12, 12 5/8; October 19, 13; October 26, 13⅜.

The R.M.A. reported consumption of rubber in the United States during September to be 37,553 long tons, an increase of 24.1% over the same month in 1934, although 4.3% less than during August, 1935. The domestic stock of crude rubber on hand September 30 was 326,236 long tons, a reduction from 329,548 long tons August 31 and 360,623 long tons September 30, 1934.

RUBBER SCRAP

THE market holds very steady and firm and on most grades shows a marked upward tendency of prices.

BOOTS AND SHOES. All grades are very firm. Collections are moderate.

INNER TUBES. All grades are very firm and steady, and prices have advanced. No. 1 has moved up ½¢, No. 2 and Red ¼¢, and mixed grade ⅛¢. Export demand is active for No. 1 and Red grades.

TIRES. The demand for tires is rated as only fair.

SOLID TIRES. Demand is fair, supply poor, and the market steady.

MECHANICALS. All grades are steady and in fair demand. No. 1 red grade has advanced ⅛¢.

HARD RUBBER. Stocks remain scanty, and demand very active. Prices are firm and unchanged. (See next column.)

CONSUMERS' BUYING PRICES

(Carload Lots Delivered Eastern Mills)

October 26, 1935

		Prices
Boots and Shoes		
Boots and shoes, black	lb.	$0.01 /$0.01⅛
Colored	lb.	.00¾/ .00⅞
Untrimmed arctics	lb.	.00¾/ .00⅞
Inner Tubes		
No. 1, floating	lb.	.08 / .08½
No. 2, compound	lb.	.03½/ .03⅝
Red	lb.	.03 / .03⅛
Mixed tubes	lb.	.02⅞/ .03
Tires (Akron District)		
Pneumatic Standard		
Mixed auto tires with beads	ton	7.50 / 8.00
Beadless	ton	11.75 /12.00
Auto tire carcass	ton	9.50 /10.00
Black auto peelings	ton	16.00 /17.00
Solid		
Clean mixed truck	ton	35.00 /36.00
Light gravity	ton	38.00 /39.00
Mechanicals		
Mixed black scrap	ton	15.00 /17.00
Hose, air brake	ton	14.00 /15.00
Garden, rubber covered	ton	13.00 /13.50
Steam and water, soft	ton	13.00 /13.50
No. 1 red	lb.	.02⅜/ .02½
No. 2 red	lb.	.01½/ .01¾
White druggists' sundries	lb.	.02¾/ .03
Mechanical	lb.	.02 / .02½
Hard Rubber		
No. 1 hard rubber	lb.	.11¼/ .11½

New York Quotations

New York outside market rubber quotations in cents per pound

	Oct. 26, 1934	Sept. 26, 1935	Oct. 26, 1935
Plantations			
Rubber latex, normal .....gal.	54	49	54 /55
Sheet			
Ribbed, smoked, spot	14 /14⅛	11½/12⅛	13⅛/13⅜
Nov.-Dec.	14⅛/14⅛	....	13⅛/13⅛
Jan.-Mar.	14⅜/14½	11⅜/12⅞	13⅜/13⅞
Apr.-June	14¾/14⅞	12⅛/12⅝	13½/13⅛
Crepe			
No. 1 thin latex, spot	14⅞/15⅛	11¾/12⅞	13⅝/13½
Nov.-Dec.	14⅛/15¼	....	13⅜/13⅝
Jan.-Mar.	15⅛/15½	12⅝/12¾	13⅜/13⅛
Apr.-June	15½/15⅞	12¾/12⅛	13¾/14⅛
No. 3 Amber, spot	11½	11⅜/11⅛	12⅝/12¾
No. 1 Brown 11⅝/11¾		11⅞/12	12¾/12⅛
Brown rolled	9⅜/ 9½	10½/11⅛	11¾/12
Paras			
Upriver fine	10¾	10½	11⅞
Upriver fine	*13¾	*12½	*13¼
Upriver coarse...	7¾	7½	8
Upriver coarse...	*11	*11½	*12¼
Islands fine	10¼	11½	12¼
Islands fine	*13¾	*12½	*13¼
Acre, Bolivian fine	10½	10¾	12
Acre, Bolivian fine	*14	*12⅝	*13½
Beni, Bolivian ...	10½	11	11⅞
Madeira fine	10¼	10½	12¼
Caucho			
Upper ball	7½	7¼	8
Upper ball	*11	*11½	*12¼
Lower ball	7	7	7¾
Pontianak			
Bandjermasin	6	7	7
Pressed block ...	10½	11½	12½
Sarawak	6	7	7
Guayule			
Duro, washed and dried	12	12	12
Ampar	13	13	13
Africans			
Rio Nuñez	12	12	14
Black Kassai	10	10	13
Prime Niger flake.	25	25	25
Gutta Percha			
Gutta Siak	9¼	12	12½
Gutta Soh	14	14	12½
Red Macassar ...	1.40	1.25	1.10
Balata			
Block, Ciudad ... Bolivar	42	32	32
Manaos block	32	27	29
Surinam sheets ..	42	30	33
Amber	45	35	37

*Washed and dried crepe. Shipments from Brazil.

Rims Approved by The Tire & Rim Association, Inc.

Rim Size	9 Mos., 1935 No.	%	9 Mos., 1934 No.	%
Drop Center Rims, 16" Dia. and Under				
15x5.50E	10	0.0	6,579	0.1
15x6.00E	.....	...	208	0.0
16x4.00D	1,508,096	11.3	1,373,651	13.8
16x4.25D	1,036,885	7.8	521,769	5.3
16x4.50D	263,533	2.0	577,610	5.8
16x5.00E	13,739	0.1	50,063	0.5
16x5.50E	9,063	0.1	14,201	0.2
16x6.00E	.....	...	49	0.0
15x5.50F	67,047	0.5	756	0.0
16x4.00E	2,141,459	16.1	58,894	0.6
16x4.25E	26,325	0.2	.....	...
16x4.50E	1,995,148	15.0	581,770	5.9
16x5.00F	75,323	0.6	111,588	1.1
16x5.50F	4,674	0.0	8,939	0.1
Drop Center Rims, 17" Dia. and Over				
17x3.00D	1,104,617	8.3	789,700	8.0
17x3.25E	553,212	4.2	862,827	8.7
17x3.62F	1,455,778	11.0	2,014,100	20.3
17x4.00F	45,508	0.3	39,805	0.4
17x4.19F	18,541	0.1	6,960	0.1
17x5.00F	1,904	0.0	.....	...
18x2.15B	15,002	0.1	20,062	0.2
18x3.00D	14,264	0.1	19,641	0.2
18x3.25E	13,258	0.1	84,380	0.9
18x3.62F	.....	...	338	0.0
18x4.00F	21	0.0	4,808	0.0
18x4.19F	14,134	0.1	12,320	0.1
19x2.15B	11,631	0.1	11,586	0.1
19x3.00D	18,499	0.1	39,624	0.4
19x3.25E	12,113	0.1	1,410	0.0
20x3.25E	8,513	0.1	963	0.0
21x3.25E	2,869	0.0	7,028	0.1
Flat Base Passenger Car Rims				
17x4	1,276	0.0	1,640	0.0
17x4½	422	0.0	.....	...
17x5	5,251	0.0	7,145	0.1
17x6	7,010	0.1	.....	...
18x3.00D	.....	...	1,005	0.0
18x3.25E	708	0.0	1,459	0.0
18x4	1,247	0.0	4,909	0.0
18x4½	386	0.0	167	0.0
18x5	2,382	0.0	1,401	0.0
19x2.75D	5,263	0.0	7,230	0.1
19x3.00D	2,080	0.0	3,053	0.0
19x3½	.....	...	519	0.0
19x4	4,446	0.0	12,199	0.1
19x4½	1,227	0.0	5,296	0.1
19x5	511	0.0	3,213	0.0
19x6	27	0.0	176	0.0
20x2.75D	2,498	0.0	8,097	0.1
20x3½	2,637	0.0	5,346	0.1
20x4	634	0.0	2,638	0.0
20x4½	2,930	0.0	4,703	0.0
20x5	12,809	0.1	23,058	0.2
20x6	107	0.0	3,932	0.0
21x2.75D	748	0.0	345	0.0
21x3½	10,513	0.1	19,054	0.2
21x4	1,221	0.0	2,256	0.0
21x4½	3,395	0.0	6,188	0.1
21x5	.....	...	361	0.0
21x6	.....	...	521	0.0

Rim Size	9 Mos., 1935 No.	%	9 Mos., 1934 No.	%
High Pressure Rims				
30x3½	1,379	0.0	3,996	0.0
31x4	94	0.0	.....	...
32x4	304	0.0	520	0.0
32x4½	.....	...	619	0.0
34x4½	.....	...	208	0.0
18" Truck Rims				
18x5	177	0.0	630	0.0
18x6	721	0.0	141	0.0
18x7	18,066	0.1	24,311	0.2
18x8	1,470	0.0	1,754	0.0
20" Truck Rims				
20x5	1,293,540	9.7	1,543,728	15.5
20x6	1,085,338	8.2	674,334	6.8
20x7	166,250	1.3	154,631	1.6
20x8	77,925	0.6	65,164	0.7
20x9/10	7,803	0.1	9,507	0.1
20x10.50	.....	...	701	0.0
20x11	720	0.0	474	0.0
22" Truck Rims				
22x7	1,090	0.0	1,440	0.0
22x8	9,776	0.1	12,241	0.1
22x9/10	5,419	0.0	5,358	0.1
24" Truck Rims				
24x5	.....	...	54	0.0
24x6	1,967	0.0	4,140	0.0
24x7	9,421	0.1	12,362	0.1
24x8	14,875	0.1	16,389	0.2
24x9/10	4,514	0.0	9,108	0.1
24x11	1,776	0.0	740	0.0
Drop Center Tractor Rims				
24x6.00S	2,577	0.0	3,339	0.0
24x8.00T	32,201	0.2	14,518	0.1
28x6.00S	157	0.0	.....	...
28x8.00T	11,573	0.1	4,226	0.0
32x8.00T	693	0.0	.....	...
36x6.00S	30,003	0.2	9,313	0.1
36x8.00T	4,382	0.0	643	0.0
40x6.00S	401	0.0	.....	...
40x8.00T	190	0.0	.....	...
Cast Rims				
10x5.00F	3,459	0.0	.....	...
24x11.25Y	182	0.0	.....	...
Clincher Rims (Auto)				
30x3½	3,805	0.0	5,480	0.1
Clincher Rims (M.C.)				
24x3	249	0.0	201	0.0
Airplane Rims				
12x3	2,415	0.0	474	0.0
44x10	10	0.0	.....	...
Totals 13,295,816		...	9,928,284	...

New York Outside Market—Spot Closing Rubber Prices—Cents per Pound

	September, 1935							October, 1935														
	23	24	25	26	27	28	30	1	2	3	4	5	7	8	9	10	11	12*	14	15	16	17	18	19
No. 1 Ribbed Smoked Sheet	11½	12	11⅜	11⅞	11⅜	11⅜	11⅞	11⅜	11¾	11⅞	12	12⅛	12⅛	12¼	12¼	12⅛	12⅛	..	12½	12¾	12¾	12¾	13	13
No. 2 Ribbed Smoked Sheet	11⅜	11⅜	11⅝	11⅛	11⅝	11⅝	11⅛	11⅝	11⅛	11⅝	11⅜	11⅞	11⅞	12⅛	12	12⅛	12¼	..	12⅛	12⅛	12⅛	12½	12¾	12¾
No. 3 Ribbed Smoked Sheet	11⅛	11⅜	11⅛	11⅝	11⅛	11⅛	11⅝	11⅛	11½	11½	11⅜	11¾	11¾	11⅜	11⅞	11⅜	12⅛	..	12⅛	12⅛	12⅛	12⅜	12⅝	12⅝
No. 4 Ribbed Smoked Sheet	11¼	11⅜	11½	11⅛	11½	11⅛	11⅛	11⅜	11⅛	11⅝	11⅜	11⅜	11⅜	11⅞	11⅜	11⅞	12⅛	..	12	12¼	12¼	12⅛	12⅛	12⅛
No. 1 Thin Latex Crepe...	11¾	12¼	12	12⅛	12	12	12⅛	12⅛	12	12⅛	12¼	12⅛	12⅛	12½	12⅛	12½	12⅜	..	12¾	13	13	13	13¼	13¼
No. 1 Thick Latex Crepe ..	11⅝	12⅛	11⅞	11⅜	11⅞	12	11⅜	11⅜	11⅞	12	12⅛	12⅛	12⅛	12⅜	12⅛	12⅜	12⅜	..	12⅝	12⅞	12⅞	12⅞	13⅛	13⅛
No. 1 Brown Crepe.....	11⅜	11⅞	11⅝	11⅜	11⅝	11⅜	11¾	11⅜	11⅝	11¾	11⅞	11⅜	11⅜	12	11⅜	12	12¼	..	12⅛	12⅛	12½	12½	12⅜	12⅜
No. 2 Brown Crepe.....	11¼	11¾	11½	11⅛	11½	11⅛	11⅜	11⅝	11⅛	11⅝	11¾	11⅜	11⅜	11⅞	11⅜	11⅞	12⅛	..	12⅛	12⅛	12⅜	12⅜	12⅛	12⅛
No. 2 Amber.....	11⅜	11⅞	11⅝	11⅜	11⅝	11⅜	11¾	11⅜	11⅝	11¾	11⅞	11⅜	11⅜	12	11⅜	12	12¼	..	12⅛	12⅛	12½	12½	12⅜	12⅜
No. 3 Amber.....	11¼	11¾	11½	11⅛	11½	11⅛	11⅜	11⅝	11⅛	11⅝	11¾	11⅜	11⅜	11⅞	11⅜	11⅞	12⅛	..	12⅛	12⅛	12⅜	12⅜	12⅛	12⅛
No. 4 Amber.....	11	11¾	11¼	11⅛	11¼	11⅛	11½	11⅜	11¾	11⅜	11⅛	11⅝	11⅝	11⅝	11⅝	11⅝	11⅞	..	11⅞	12⅛	12⅛	12⅛	12⅜	12⅜
Rolled Brown.....	10⅜	10⅞	10½	10⅛	10½	10⅝	10⅛	10⅝	10⅛	10⅛	10⅛	10⅞	10⅞	11	11⅛	11⅛	11¼	..	11⅛	11⅛	11½	11⅝	11⅞	11⅞

*Holiday.

New York Outside Market (Continued)

	October, 1935					
	21	22	23	24	25	26
No. 1 Ribbed Smoked Sheet	12⅛	12⅛	13⅛	13⅛	13⅛	13⅜
No. 2 Ribbed Smoked Sheet	12⅝	12⅞	12⅛	12⅛	13	13⅛
No. 3 Ribbed Smoked Sheet	12⅜	12⅛	12⅛	12⅛	12⅞	12⅛
No. 4 Ribbed Smoked Sheet	12½	12¾	12⅝	12⅝	12⅛	12⅞
No. 1 Thin Latex Crepe	13⅛	13⅛	13⅛	13⅛	13⅛	13⅝
No. 1 Thick Latex Crepe	13	12⅛	13⅛	13⅛	13⅛	13½
No. 1 Brown Crepe	12⅛	12⅞	12⅛	12⅛	12⅛	13
No. 2 Brown Crepe	12⅛	12⅛	12⅛	12⅛	12⅛	12⅞
No. 2 Amber	12⅛	12⅞	12⅛	12⅛	12⅛	13
No. 3 Amber	12⅛	12⅛	12⅛	12⅛	12⅛	12⅞
No. 4 Amber	12⅜	12⅛	12½	12½	12⅝	12⅛
Rolled Brown	11⅞	11¾	12	12	12⅛	12¼

Low and High New York Spot Prices

All Prices in Cents per Pound

	October 1935*	October 1934	October 1933
PLANTATIONS			
No. 1 thin latex crepe	12 /13⅝	13¾/15½	7¾/8⅞
No. 1 ribbed smoked sheet	11¾/13⅜	13 /14½	6⅞/8
PARAS			
Upriver fine	10½/11½	10 /10¾	8 /9¼

*Figured to October 26, 1935.

COMPOUNDING INGREDIENTS

THE demand for compounding materials is reflecting the increased activity taking place in the chief lines of rubber products. The importance of ingredients for conferring oil resistance to rubber is now being met by a number of materials. The latest for this purpose is the hydrocarbon product AXF.[1] Two other new additions for the use of rubber compounders are Ovac,[1] a semi-ultra accelerator to counteract tendency to tread cracking, and the anti-scorch and antioxidant material designated as T-J-B,[1] recommended for associate use with Ovac.

[1] See page 39.

CARBON BLACK. The present situation is as follows. Production and consumption are well balanced, with no particular change in the stock position. The effects of the legislation passed in Texas with regard to control of gas and the elimination of wastage have been pronounced in several directions. The final outcome is not yet known, but there is undoubtedly an increase in the price of gas. Any forecast now for next year is impossible owing to the fact that a special session of the Texas legislature has been convened to take up the matter of additional taxes.

LITHARGE. Early in October the price advanced to 6¼¢ a pound, but within a week fell back to 6¢, its previous level. Since then the price has remained unchanged, and demand fair.

SOLVENTS. Demand for petroleum solvents is active at unchanged prices.

TITANIUM PIGMENTS. Substantial quantities of titanium dioxide and titanium calcium pigment are being taken by the rubber industry. Withdrawals by the manufacturers in September were especially good, and continuation of active demand is expected from current indications.

ZINC OXIDE. A drastic price cut became effective October 1 for the final quarter. The response was an active demand, which is still in progress.

New York Quotations

October 26, 1935

Prices Not Reported Will Be Supplied on Application

Abrasives			
Pumicestone, powdered	lb.	$0.02	/$0.03½
Rottenstone, domestic	lb.	.03	/ .03½
Silica, 15	ton	38.00	
Accelerators, Inorganic			
Lime, hydrated	ton	20.00	
Litharge (commercial)	lb.	.06½/	.07
Magnesia, calcined, heavy	lb.	.04	
carbonate	lb.	.06½/	.07
Accelerators, Organic			
A-1	lb.	.21 /	.25
A-5-10	lb.	.33 /	.36
A-10	lb.		
A-11	lb.	.60 /	.75
A-16	lb.	.55 /	.65
A-19	lb.	.56 /	.75
A-32	lb.	.70 /	.80
A-77	lb.		
Accelerator 49	lb.	.40 /	.50
85	lb.		
87	lb.		
122	lb.		
552	lb.		
808	lb.		
833	lb.		
Acrin	lb.		
Aldehyde ammonia	lb.		
Altax	lb.		
Beutene	lb.		
Butyl Zimate	lb.		
C-P-B	lb.		
Captax	lb.		
Crylene	lb.		
Paste	lb.		
D-B-A	lb.		
Di-Esterex	lb.		
Di-Esterex-N	lb.		
DOTG	lb.	.44 /	.54
D.O.T.T.U.	lb.		
DPG	lb.	.35 /	.45
Ethylideneaniline	lb.		
Formaldehyde P.A.C.	lb.		
Formaldehydeaniline	lb.		
Formaldehyde-para-toluidine	lb.		
Guantal	lb.	.42 /	.51
Hepteen	lb.		
Base	lb.		
Hexamethylenetetramine	lb.		
Lead oleate, No. 999	lb.	.11	
Witco	lb.	.11	
Methylenedianilide	lb.		
Monex	lb.		
Novex	lb.		
Ovac	lb.		
Pipsolene	lb.		
R-2	lb.	1.50 /	1.90
Base	lb.	4.55 /	5.00
R & H 50-D	lb.		
Safex	lb.		
Super-sulphur No. 1	lb.		
No. 2	lb.		
Tepidone	lb.		
Tetrone A	lb.		
Thiocarbanilide	lb.		
Thionex	lb.		
Trimene	lb.		
Base	lb.		
Triphenyl guanidine (TPG)	lb.		
Tuads	lb.		
Ureka	lb.	$0.62	/$1.00
Blend B	lb.		
C	lb.	.58 /	.69
Vulcanex	lb.		
Vulcanol	lb.		
Vulcone	lb.		
Z-B-X	lb.		
Z-88-P	lb.	.48 /	.60
Zenite	lb.		
A	lb.		
B	lb.		
Zimate	lb.		
Activator			
Barak	lb.		
Age Resisters			
Age-Rite Gel	lb.		
HP	lb.		
Powder	lb.		
Resin	lb.		
Syrup	lb.		
White	lb.		
Akroflex A	lb.		
B	lb.		
C	lb.		
Albasan	lb.		
Antox	lb.		
A-V-A-R	lb.		
B-L-E	lb.		
Flectol B	lb.		
H	lb.		
White	lb.		
M-U-F	lb.		
Neozone (standard)	lb.		
A	lb.		
C	lb.		
D	lb.		
E	lb.		
Oxynone	lb.		
Parazone	lb.		
Permalux	lb.		
Solux	lb.		
Thermoflex	lb.		
A	lb.		
V-G-B	lb.		
Alkalies			
Caustic soda, flake, Columbia (400 lb. drums)	100 lbs.	3.00 /	4.00
liquid, 50%	100 lbs.	2.25	
solid (700 lb. drums)	100 lbs.	2.60 /	3.60
Antiscorch Materials			
Antiscorch T	lb.		
Cumar RH	lb.	.085	
Retarder B	lb.		
W	lb.		
T-J-B	lb.		
U.T.B.	lb.		
Antisun Materials			
Heliozone	lb.		
Sunproof	lb.		
Binder, Fibrous			
Asbestos	ton	30.00	
Brake Lining Saturants			
B. R. C. No. 553	lb.	.015 /	.017
B. R. T. No. 3	lb.	.015 /	.017
Colors			
BLACK			
Lampblack (commercial)	lb.	$0.15	
BLUE			
Brilliant	lb.		
Prussian	lb.	.40	
Toners	lb.	.80	/$3.50
Ultramarine, dry, Group 1	lb.	.14	
BROWN			
Mapico	lb.	.13	
GREEN			
Brilliant	lb.		
Chrome, light	lb.	.20	
medium	lb.	.20	
oxide	lb.	.18½	
Dark	lb.		
Guignet's	lb.	.75	
Light	lb.		
Toners	lb.	.85	/ 3.50
ORANGE			
Lake	lb.		
Toners	lb.	.40	/ 1.60
ORCHID			
Toners	lb.	1.50	/ 2.00
PINK			
Toners	lb.	1.50	/ 4.00
PURPLE			
Permanent	lb.		
Toners	lb.	.60	/ 2.00
RED			
Antimony			
Crimson, 15/17%	lb.	.50	
R. M. P. No. 3	lb.	.46	
Sulphur free	lb.	.48	
Golden 15/17%	lb.	.28	
7-A	lb.	.33	
Z-2	lb.	.22	
Aristi	lb.	1.70	
Cadmium	lb.	.75 /	.80
Chinese	lb.		
Crimson	lb.		
Mapico	lb.		
Medium	lb.		
Rub-Er-Red	lb.	.09½	
Scarlet	lb.		
Toners	lb.	.80 /	2.00
WHITE			
Lithopone (bags)	lb.	.04½/	.04¾
Albalith Black Label-11	lb.	.04½/	.04¾
Astrolith (5-ton lots)	lb.	.04½/	.04¾
Azolith	lb.	.04½/	.04¾
Cryptone-19	lb.	.06 /	.06¼
CB-21	lb.	.06 /	.06¼
ZS No. 20	lb.	.10½/	.10¾
No. 86	lb.	.10½/	.10¾
Sunolith (5-ton lots)	lb.	.04½/	.04¾
Ray-Bar	lb.		
Ray-Cal	lb.		
Rayox	lb.		
Titanolith (5-ton lots)	lb.	.06 /	.06¼
Titanox-A (50-lbs. bags)	lb.	.17 /	.18½
B (50-lb. bags)	lb.	.06 /	.06¼
C (50-lb. bags)	lb.	.06 /	.06¼
Ti-Tone	lb.		

Zinc Oxide
Anaconda, Green Seal
No. 333 ..... lb. $0.06 /$0.06¼
Lead Free No. 352 .... lb. .05 / .05¼
No. 570 ..... lb. .05 / .05¼
No. 577 ..... lb. .05 / .05¼
Red Seal No. 222 ..... lb. .05½/ .05¾
U.S.P. No. 777 (bbls). lb. .08
White Seal No. 555 ... lb. .06½/ .06¾
Azo ZZZ-11 ..... lb. .05 / .05¼
44 ..... lb. .05 / .05¼
55 ..... lb. .05 / .05¼
66 ..... lb. .05 / .05¼
French Process, Florence
White Seal-7 (bbls.) .. lb. .06½/ .06¾
Green Seal-8 ..... lb. .06 / .06¼
Red Seal-9 ..... lb. .05½/ .05¾
Kadox, Black Label-15 . lb. .05 / .05¼
Blue Label-16 ..... lb. .05 / .05¼
Red Label-17 ..... lb. .05 / .05¼
Horse Head Special 3 .... lb. .05 / .05¼
XX Red-4 ..... lb. .05 / .05¼
23 ..... lb. .05 / .05¼
72 ..... lb. .05 / .05¼
78 ..... lb. .05 / .05¼
80 ..... lb. .05 / .05¼
103 ..... lb. .05 / .05¼
110 ..... lb. .05 / .05¼
St. Joe (lead free)
Black Label No. 20 .... lb. .05 / .05¼
Green Label No. 42 .... lb. .05 / .05¼
Red Label No. 30 ..... lb. .05 / .05¼
U.S.P. X ..... lb. .08

YELLOW

Cadmolith (cadmium yellow). lb. .40 / .45
Lemon ..... lb.
Mapico ..... lb. .09½
Toners ..... lb. 2.50

Dispersing Agents

Bardol ..... lb. .021 / .023
Darvan ..... lb.

Factice—See Rubber Substitutes

Fillers, Inert

Asbestine, c.l., f.o.b. mills. ton 15.00
Barytes ..... ton 30.00
f.o.b St. Louis (50 lb. paper bags) ..... ton 22.85
off color, domestic ..... ton 20.00 /25.00
white, imported ..... ton 29.00 /32.00
Blanc fixe, dry, precip. ..... lb. .03¼/ .05
Calcene ..... ton 35.00 /43.00
Infusorial earth ..... lb. .02
Kalite No. 1 ..... ton
No. 3 ..... ton
Whiting
Columbia Filler ..... ton 9.00 /14.00
Domestic ..... 100 lbs.
Guilders ..... 100 lbs.
Hakuenka ..... lb.
Paris white, English cliff-stone ..... 100 lbs.
Southwark Brand, Commercial ..... 100 lbs.
All other grades .. 100 lbs.
Suprex, white, extra light. ton 45.40 /60.00
heavy ..... ton 45.40 /60.00
Witco, c.l. ..... ton 7.00
Wood flour ..... ton 22.00 /50.00

Fillers for Pliability

Fumonex, c.l., f.o.b. works, bags ..... lb. .03
l.c.l., f.o.b. warehouse .. lb. .05½/ .07
P-33 ..... lb.
Thermax ..... lb.
Velvetex ..... lb. .03 / .04½

Finishes

IVCO lacquer, clear ..... gal.
colors ..... gal.
Rubber lacquer, clear ..... gal.
colored ..... gal.
Starch, corn, pwd ..... 100 lbs. 3.68 / 3.88
potato ..... lb. .04½/ .05½
Talc ..... ton 25.00 /45.00
Dusting ..... ton
Pyrax ..... ton

Flock

Cotton flock, dark ..... lb. .10½/ .11½
dyed ..... lb. .50 / .85
white ..... lb. .14½/ .20
Rayon flock, colored ..... lb. 1.25 / 1.40
white ..... lb. 1.00

Latex Compounding Ingredients

Alphasol-OS ..... lb.
Antox, dispersed ..... lb.
Aquarex D ..... lb.
F ..... lb.
Aresklene ..... lb.
Casein, domestic, ground, 20-30 mesh ..... lb. .13
Catalpo ..... ton
Color pastes, dispersed ..... lb.
Dispersaid ..... lb. 1.50
Dispersex 10 ..... lb. .75
15 ..... lb. .95
20 ..... lb. .75
Emo, brown ..... lb. .13
white ..... lb. .13
Factice Compound, dispersed ..... lb. .25
Heliozone, Dispersed ..... lb.
Igepon A ..... lb.
Micronex, Colloidal (75 lbs.) lb. $0.11
320 lbs. ..... lb. .08
Nekal BX (dry) ..... lb.
Palmol ..... lb. .085
Stablex A ..... lb. 1.75
B ..... lb. .90
C ..... lb. .30
Sulphur, Colloidal ..... lb.
Vulcan Colors ..... lb.
Zinc oxide, Colloidal ..... lb.

Mineral Rubber

B. R. C. No. 20 ..... lb. .0125/$0.014
Black Diamond ..... ton 25.00
Genasco Hydrocarbon, granulated, (fact'y) ... ton
solid ..... ton
Gilsonite Hydrocarbon (factory) ..... ton
Hydrocarbon, hard ..... ton
soft ..... ton
Parmr Grade 1 (f.o.b. Bayonne) ..... ton 30.00
Grade 2 ..... ton 30.00
265° ..... ton

Mold Lubricants

Mold Paste No 1 ..... lb.
Rusco mold paste ..... lb. .12 / .30
Sericite ..... ton 65.00 /70.00
Soapbark ..... lb.
Soapstone ..... ton 25.00 /35.00

Oil Resistant

AXF ..... lb.

Reclaiming Oils

B. R. V. ..... lb. .039 / .041
S. R. O. ..... lb. .012 / .014

Reenforcers

Carbon Black
Aerfloted Arrow Specification Black ..... lb. .0535/ .0825
Arrow Compact Granualized Carbon Black ..... lb.
"Certified" Spheron, Cabot ..... lb.
Disperso (delivered) ..... lb. .0445/ .0535
Dixie, c.l., f.o.b. New Orleans, La., Galveston or Houston, Tex. ..... lb. .0445
c.l., delivered New York. lb. .0535
local stock delivered.. lb. .07 / .08¼
Dixiedensed, c.l, f.o.b. New Orleans, La., Galveston or Houston, Tex. ..... lb. .0445
c.l., delivered New York. lb. .0535
local stock delivered.. lb. .07 / .08¼
Excello, c.l., f.o.b Gulf ports ..... lb. .0445
delivered New York. lb. .0535
l.c.l., delivered New York ..... lb. .07 / .08¼
Gastex ..... lb. .03 / .07
Kosmobile, c.l., f.o.b New Orleans, La., Galveston or Houston, Tex. ..... lb. .0445
c.l., delivered New York. lb. .0535
local stock delivered.. lb. .07 / .08¼
Kosmos, c.l., f.o.b. New Orleans, La., Galveston or Houston, Tex. ..... lb. .0445
c.l., delivered New York. lb. .0535
local stock delivered.. lb. .07 / .08¼
Micronex Beads ..... lb.
Mark II ..... lb.
Standard ..... lb.
W-5 ..... lb.
W-6 ..... lb.
Pelletex ..... lb. .03 / .07
Supreme, c.l., f.o.b. Gulf ports ..... lb. .0445
delivered New York. lb. .0535
l.c.l., delivered New York ..... lb. .07 / .08¼
Carbonex ..... lb. .030 / .0375
Carbonex "S" ..... lb. .0315/ .040
Clays
Aerfloted Paragon ..... ton 8.50
Suprex No. 1 Selected. ton 10.00
No. 2 Standard. ton 8.50
Dixie ..... ton
Junior ..... ton
McNamee ..... ton
Par ..... ton
Witco ..... ton 8.50
Cumar EX ..... lb. .04

Reodorants

Amora A ..... lb.
B ..... lb.
C ..... lb.
D ..... lb.
Para-Dors ..... lb.
Rodo No. 0 ..... lb.
No. 10 ..... lb.

Rubber Substitutes or Factice

Amberex ..... lb. .35
Black ..... lb. .07 / .11
Brown ..... lb. .07 / .12
Duphax A ..... lb. .11
B ..... lb. .11
Fac-Cel B ..... lb. .12
C ..... lb. .12
White ..... lb. .07 / .12

Softeners

B. R. C. No. 555 ..... lb. $0.012 /$0.014
B. R. T. No. 7 ..... lb. .015 / .017
Burgundy pitch ..... lb. .05
(net weight) ..... lb. .07 / .08½
Cycline oil ..... gal. .15 / .28
Palm oil (Witco) ..... lb. .06
Petrolatum, light amber .... lb. .03½/ .03¾
Pigmentar (drums) ..... gal. .25 / .27
Pigmentaroil (drums) .... gal. .25 / .27
Pine oil, dest. distilled (drums) ..... gal. .44 / .48
pitch ..... bbl. 6.00
tar (drums) ..... gal. .25 / .27
Plastogen ..... lb.
Reogen ..... lb.
Rosin oil, compounded .... gal. .40
Rubtack ..... lb. .10
Tackol ..... lb. .085 / .18
Tonox ..... lb.
Powder ..... lb.
Witco No. 20 ..... gal. .15

Softeners for Hard Rubber Compounding

RSL Resin ..... lb.
Resin C Pitch 55° C. M. P. .... lb. .0125/ .0145
Resin C Pitch 70° C. M. P. .... lb. .0125/ .0145
Resin C Pitch 85° C. M. P. .... lb. .0126/ .0145

Solvents

Benzol 90% (drums) ..... gal. .23
Beta-Trichlorethane ..... gal.
Bondogen ..... lb.
Carbon bisulphide ..... lb. .05¼/ .08½
tetrachloride ..... lb. .05¼
Dipentene, commercial (drums) ..... gal. .42 / .44
Rubber (Group 3, refinery) . gal. .06⅞/ .07¼
Solvesso No. 1, tank cars. gal. .15
No. 2 ..... gal. .18
No. 3 ..... gal. .15
No. 4 ..... gal. .18
Turpentine, wood, dest. distilled (drums) ..... gal. .41 / .43

Stabilizers for Cure

Laurex, ton lots ..... lb.
Stearex B ..... lb. .10¾/ .11¾
Beads ..... lb. .084 / .094
Stearic acid, single pressed. lb. .11 / .13
Stearite ..... lb. .08
Zinc stearate ..... lb. .22

Synthetic Rubber

DuPrene Latex Type 50. gal.
Type D ..... lb.
Thiokol ..... lb.
C-103 ..... lb.
D ..... lb.
Molding Powder ..... lb.

Tackifier

B. R. H. No. 2 ..... lb. .015 / .020

Varnish

Shoe ..... gal. 1.45

Vulcanizing Ingredients

Sulphur
Chloride, drums ..... lb. .03½/ .04
Rubber ..... 100 lbs. 1.95 / 2.75
Telloy ..... lb.
Vandex ..... lb.
(See also Colors—Antimony)

Waxes

Carnauba, No. 3 chalky ... lb. .38¾/ .39
2 N.C. ..... lb. .43
3 N.C. ..... lb. .39 / .39½
1 Yellow ..... lb. .50 / .51
2 ..... lb. .49 / .50
Montan, crude ..... lb. .11

Rubber Bibliography

(*Continued from page 52*)

LATEST DEVELOPMENT IN RUBBER FLOORING. W. H. Reece, *Kautschuk*, Sept., 1935, pp. 161-64.

MODERN POSSIBILITIES IN DRIVES FOR MACHINES IN THE RUBBER INDUSTRY. F. Grunwald, *Kautschuk*, Sept., 1935, pp. 173-76.

IMPORTANCE OF STANDARDIZATION IN THE RUBBER INDUSTRY. P. Bruere, *Rev. gén. caoutchouc*, July-Aug., 1935, pp. 13-15.

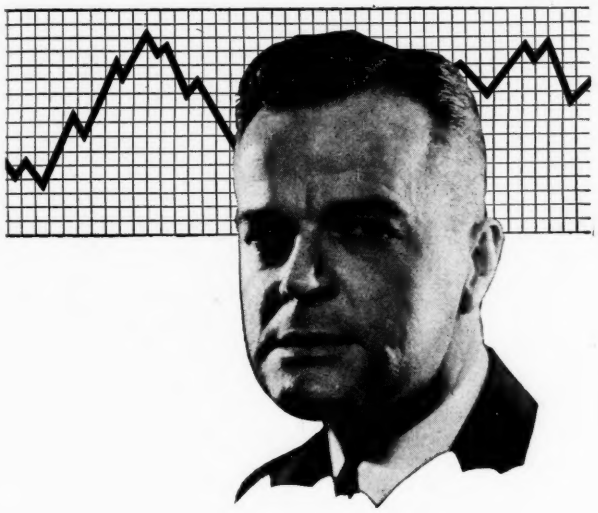
CONTROL OF STEAM CONSUMPTION IN THE DIFFERENT DEPARTMENTS OF A RUBBER FACTORY. F. Truchet, *Rev. gén. caoutchouc* July-Aug., 1935, pp. 16-22.

MOLDED GOODS AND HOLLOW ARTICLES. *Gummi-Ztg.*, Sept. 20, 1935, pp. 959-60.

THE SHOCK-ABSORBING QUALITY OF RUBBER. L. Frumkin and V. Margaritov, *Chem. Tech.*, Oct., 1935, pp. 528-47. (Translation.)

THIS MANUFACTURER OF

RUBBER GOODS



speeded up the sales of a rubber toy after he had given it a persuasive scent with a

PARADOR

and as a result began using a PARADOR in almost every product in his line. He's completely sold on the idea—and so are his customers—of making sales with *better smelling* rubber merchandise.

It's a fact, once a manufacturer adopts a Givaudan Deodorant he increases his consumption of deodorants because he finds it pays in bigger sales.

15 PARADORS are available—neutral or scented, for a wide variety of rubber products. Write for samples and further information.

GIVAUDAN
DELAWANNA INC.
Industrial Aromatics Division
80 FIFTH AVENUE, NEW YORK, N. Y.

Regular and Special Constructions
of
COTTON FABRICS

Single Filling Double Filling
and
ARMY
Ducks

HOSE and BELTING
Ducks

Drills

Selected
Osnaburgs

Curran & Barry
320 BROADWAY
NEW YORK

COTTON AND FABRICS

NEW YORK COTTON EXCHANGE WEEK-END CLOSING PRICES

Futures	Aug. 31	Sept. 28	Oct. 5	Oct. 12	Oct. 19	Oct. 26
Sept.	10.31	.....	.....	.....	.....	.....
Oct.	10.31	10.46	11.00	10.85	10.86	.....
Dec.	10.33	10.44	10.95	10.83	10.83	10.92
Mar.	10.44	10.55	11.02	10.90	10.83	10.92
July	10.50	10.69	11.11	10.95	10.86	10.97
Sept.	.....	.....	.....	.....	.....	10.89

THE above table gives the nearest first and last week-end closing prices of the month previous to that under review, also the week-end closing prices of each week of last month up to time of going to press. This plan permits tracing at a glance the prices of representative futures for approximately two consecutive months.

During the entire month of September the price of cotton futures described a fairly level curve. The near months varied between 10.30 and 10.46, which was about 1¢ per pound below the price prevailing prior to Congress amending the AAA, thus bringing the loan value to 10¢ from 12¢ that had previously existed. The price trend, while turning upward moderately as September closed, did so sharply early in October. The extent of this was such as to cross the 11¢ level to the best prices since mid-August. Influencing this was a steady good demand by domestic mills, a much increased foreign demand, and very prevalent indications that the Italy-Ethiopia hostilities would result in a greatly increased demand for American cotton. A further bullish atmosphere was given by early predictions that the Government's October crop estimate would be materially reduced as against that given in September: namely, 11,489,000, because of unfavorable crop weather.

The last two conditions did not materialize, however, as expected. Excessive sales for the war countries were not being made as the month drew on; neither did the 25,000-bale decrease of the Government's estimate fulfill the traders' hopes. The result was that the upward trend gave way to leveling in the region of 10.85. Exports are substantially higher this season than last; which condition causes Secretary of Agriculture Wallace to recall his prediction of several weeks ago that exports this year would approximate pre-depression figures.

Cotton Fabrics

DUCKS, DRILLS, AND OSNABURGS. Prices of cotton textiles in coarse yarn constructions advanced sharply during the past month. The volume of business also increased, and mills are producing more actively than at any time in the past six months. The stimulus has come mainly from the broad demand of many lines of trade. A part of the acute interest in textiles originates in the rise of the price of cotton from a low of about 10½¢ for the actual to the now current basis of substantially 12¢ for good spinning grades. Current prices for fabrics are expected to be maintained, and the probability is that further sharp advances will occur during the next six to eight weeks.

RAINCOAT FABRICS. Fall business has about ended. Manufacturers are now making up their new spring lines.

SHEETINGS. Large quantities of merchandise have been sold this fall. Prices in most directions are slightly higher and decidedly firm.

TIRE FABRICS. Demand is moderate and seasonal; while prices continue steady and unchanged.

WEEKLY AVERAGE PRICES OF MIDDLING COTTON

Week Ended	Cents per Pound
Sept. 28	10.83
Oct. 5	11.21
Oct. 12	11.30
Oct. 19	11.22
Oct. 26	11.28

New York Quotations

October 26, 1935

Drills		
38-inch 2.00-yard	yd.	$0.15½
40-inch 3.47-yard		.09½
50-inch 1.52-yard		.21¾
52-inch 1.85-yard		.17¾
52-inch 1.90-yard		.16
52-inch 2.20-yard		.14¾
52-inch 2.50-yard		.13
59-inch 1.85-yard		.16½
Ducks		
38-inch 2.00-yard D. F.	yd.	.15¾
40-inch 1.45-yard S. F.		.21¾
51¼-inch 1.35-yard D. F.		.22⅝
72-inch 1.05-yard D. F.		.31½
72-inch 17.21-ounce		.35½
MECHANICALS		
Hose and belting	lb.	.35
TENNIS		
52-inch 1.35-yard	yd.	.23⅞
***Hollands**		
GOLD SEAL		
30-inch No. 72	yd.	.19
40-inch No. 72		.20
RED SEAL		
30-inch	yd.	.16½
40-inch		.17½
50-inch		.23
Osnaburgs		
40-inch 2.34-yard	yd.	.12 /.13½
40-inch 2.48-yard		.11⅜/.12¾
40-inch 2.56-yard		.11
40-inch 3.00-yard		.10⅝
40-inch 7-ounce part waste		.12
40-inch 10-ounce part waste		.17
37-inch 2.42-yard		.12⅞
Raincoat Fabrics		
COTTON		
Bombazine 60 x 64	yd.	.09
Plaids 60 x 48		.11½
Surface prints 60 x 64		.12½
Print cloth, 38½-inch, 60 x 64		.06⅜
SHEETINGS, 40-INCH		
48 x 44, 2.50-yard	yd.	.11
64 x 68, 3.15-yard		.10¼
56 x 60, 3.60-yard		.09
44 x 48, 3.75-yard		.07⅞
SHEETINGS, 36-INCH		
48 x 40, 5.00-yard	yd.	.06¼
44 x 40, 6.15-yard		.05⅛
Tire Fabrics		
BUILDER		
17¼ ounce 60" 23/11 ply Karded peeler	lb.	.36
CHAFER		
14 ounce 60" 20/8 ply Karded peeler	lb.	.36
9¼ ounce 60" 10/2 ply Karded peeler	lb.	.34
CORD FABRICS		
23/5/3 Karded peeler, 1 1/16" cotton	lb.	.36
15/3/3 Karded peeler, 1 1/16" cotton	lb.	.34
23/5/3 Karded peeler, 1¼" cotton	lb.	.40
23/5/3 Combed Egyptian	lb.	.52
LENO BREAKER		
8¾ ounce and 10¼ ounce 60" Karded peeler	lb.	.36

*For less than 1,000 yards of a width add 10% to given prices.

Trade Marks

(*Continued from page 68*)

327,235. **Darex.** Artificial leather. Dewey & Almy Chemical Co., Cambridge, Mass.

327,329. **Sky-Way.** Tires and inner tubes. Badger Rubber Works, Chicopee Falls, Mass.

327,341. **Holmspray.** Atomizers. T. J. Holmes Co., Inc., Chartley, Mass.

327,400. Representation of a fanciful design and the words: **"Softex Birds Eye."** Lap pads, crib sheets, and textile material sheeting. I. B. Kleinert Rubber Co., New York, N. Y.

327,404. **Vest-Pak.** Tobacco pouches. International Latex Corp., Rochester, N. Y.

327,434. **Sturdiweve.** Men's wearing apparel. Schloss Bros. & Co., Inc., Baltimore, Md.

327,445. **Dentelle-lastik.** Corsets, corselets, and girdles. Franco Corset Co., New York, N. Y.

327,461. Representation of a container containing the word: **"Koin-Pack."** Prophylactic rubber articles. Koin-Pak Sales Corp., Akron, O.

327,473. **Wee Wee.** Dolls. Paragon Rubber Corp., New York, N. Y.

327,552. Label containing representation of four Japanese women in a garden, and above it the words: **"A. W. Faber."** Stationers' supplies. A. W. Faber, Inc., Newark, N. J.

327,562. **Our Little Girl.** Dolls. Ideal Novelty & Toy Co., Long Island City, N. Y.

327,563. **Curly Top.** Dolls. Ideal Novelty & Toy Co., Long Island City, N. Y.

327,565. **Windo Pane.** Men's wearing apparel. Lamm Bros., Inc., Baltimore, Md.

327,594. **Firm Grip Glove.** Gloves. Seiberling Latex Products Co., Akron, O.

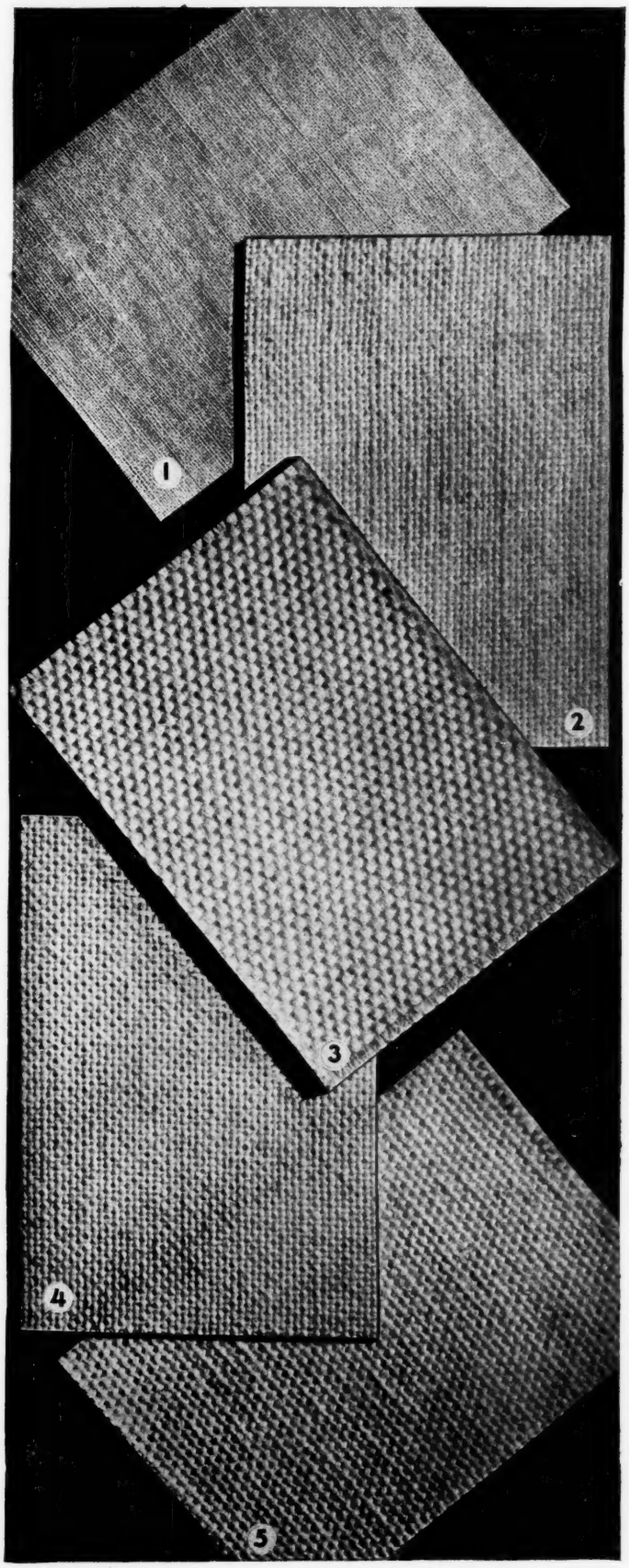
327,612. **Mircir.** Elastics. Shelton Textile Fabric Co., Shelton, Conn.

327,613. **Perfectus 88.** Elastics and elastic braids. Shelton Textile Fabric Co., Shelton, Conn.

327,688. Representation of a tire punctured full of nails, and thereupon the word: **"Autosan."** Adhesive composition for preventing flat tires. Autosan Corp. of America, New York, N. Y.

327,762. **Tri-Sorb.** Shock absorbers. Goodyear Tire & Rubber Co., Akron, O.

327,767. **Paratex.** Semi-hard rubber composition for toys and dolls. Paragon Rubber Corp., New York, N. Y.



FABRICS
for use with
RUBBER

With many years of experience in working with the engineers and purchasing agents of the leading rubber companies, we are in position to supply both standard and special fabrics to suit your particular needs.

Seventeen mills and adequate engineering and laboratory facilities assure you of technical excellence and ultimate economy.

Fabrics illustrated at left:

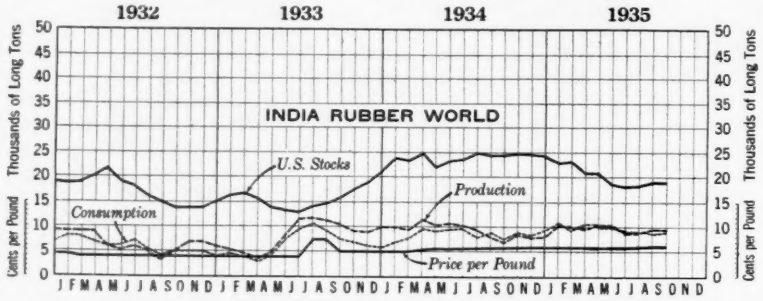
1. *COLUMBUS Sheeting*
2. *WEST POINT Osnaburg*
3. *SHAWMUT Belting Duck*
4. *WEST POINT Chafer Fabric*
5. *SHAWMUT Hose Duck*

Our 538-page Handbook of Industrial Fabrics gives a very complete description of cotton, cotton manufacturing processes, uses for industrial fabrics, laboratory test methods, specifications, etc. Price $2.00. One copy free to any well-rated rubber manufacturer in the United States, upon request on company letterhead.

WELLINGTON SEARS CO.
65 WORTH STREET NEW YORK

RECLAIMED RUBBER

THE demand for reclaim is showing some tendency to increase. The gain, if it materializes, should show in the statistics for October a month hence. Increased activity is reported for general lines of rubber goods production, notably in tires, tubes, footwear, and mechanicals. Reclaimers also are stepping up their output, encouraged in part by the strong position of crude. Prices on all standard grades are quoted unchanged from one month ago.


1932
1933
1934
1935
INDIA RUBBER WORLD
U.S. Stocks
Production
Consumption
Price per Pound
Thousands of Long Tons
Cents per Pound
J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D

Production, Consumption, Stocks, and Price of Tire Reclaim

United States Reclaimed Rubber Statistics—Long Tons

Year	Production	Consumption	Consumption % to Crude	U. S. Stocks*	Exports
1933	99,974	81,612	20.1	20,746	3,583
1934	110,010	100,597	22.3	23,079	4,737
1935					
January	10,465	11,261	23.9	22,291	517
February	10,072	9,374	21.7	22,989	332
March	9,741	10,549	24.8	20,637	310
April	10,315	10,466	23.4	20,521	476
May	10,223	9,938	23.9	18,541	402
June	8,590	8,710	23.8	17,932	283
July	8,421	8,396	23.1	17,810	384
August	9,557	8,795	22.4	18,272	320
September	9,041	8,774	23.4	18,260	....

*Stocks on hand the last of the month or year.
Compiled by The Rubber Manufacturers Association, Inc.

New York Quotations

October 26, 1935

High Tensile	Spec. Grav.	Cents per lb.
Super-reclaim, black	1.20	8¾/9
red	1.20	7 /7¼
Auto Tire		
Black	1.21	5 /5¼
Black selected tires	1.18	5¼/5½
Dark gray	1.35	6¼/6½
White	1.40	9¼/9½
Shoe		
Unwashed	1.60	6½/6¾
Washed	1.50	8 /9
Tube		
No. 1	1.00	13 /
No. 2	1.10	7½/7¾
Truck Tire		
Truck tire, heavy gravity	1.55	5½/6
Truck tire, light gravity	1.40	6 /6¾
Miscellaneous		
Mechanical blends	1.60	4¼/4½

IMPORTS, CONSUMPTION, AND STOCKS

CRUDE rubber consumption by United States manufacturers for September, 1935, totaled 37,553 long tons, against 39,242 long tons for August, 1935, a decrease of 4.3% below August, but 24.1% above September, 1934, according to R.M.A. statistics. Consumption for September, 1934, was given as 30,258 long tons, a revised figure.

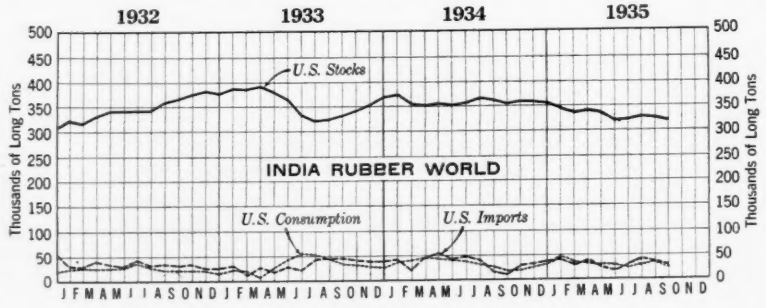
Crude rubber imports for September were 34,569 long tons, 10.6% below the August figure of 38,665 long tons, but 19.9% over the 28,835 long tons imported in September, 1934.

The estimated total domestic stocks of crude rubber on hand September 30 were 326,236 long tons, compared with August 31 stocks of 329,548 long tons and 360,623 long tons on hand September 30, 1934.

Crude rubber afloat to United States ports on September 30 was 43,413 long tons, against 47,724 long tons afloat August 31 and 38,831 long tons afloat on September 30, 1934.

London and Liverpool Stocks

Week Ended	Tons London	Tons Liverpool
Sept. 28	100,542	76,416
Oct. 5	100,635	76,746
Oct. 12	100,405	76,139
Oct. 19	97,642	76,092
Oct. 26	94,560	76,070


1932
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Thousands of Long Tons
J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D

United States Stocks, Imports, and Consumption

United States and World Statistics of Rubber Imports, Exports, Consumption, and Stocks

Twelve Months	U. S. Imports* Tons	U. S. Consumption Tons	U. S. Stocks Mfgrs., Importers, Dealers, Etc.† Tons	U. S. Stocks Afloat† Tons	U. K.—Public Warehouses, London, Liverpool†‡ Tons	Singapore and Penang Dealers and Port Stocks†‡ Tons	World Production (Net Exports)‡ Tons	World Consumption Estimated‡ Tons	World Stocks†‡§ Tons
1933	411,615	401,000	365,000	55,606	86,505	44,884	850,300	798,900	616,370
1934	469,484	453,223	355,000	47,644	134,927	62,142	1,016,784	959,556	678,994
1935									
January	42,059	47,103	346,084	42,066	148,337	59,609	79,860	89,216	671,954
February	35,383	43,187	337,332	42,969	155,727	57,586	75,775	90,494	658,717
March	44,041	42,620	338,700	44,485	162,012	55,100	66,686	88,112	652,659
April	43,545	44,714	334,954	37,651	165,064	48,827	76,443	80,261	651,471
May	26,866	41,568	319,281	44,375	167,745	54,740	77,908	71,543	648,991
June	38,340	36,623	320,470	55,581	171,303	51,770	74,635	66,043	648,579
July	46,880	36,384	330,528	49,018	174,227	49,958	71,354	80,351	655,154
August	38,665	39,242	329,548	47,724	177,250	46,482	77,465	.....	658,851
September	34,569	37,553	326,236	43,413	.....	.....	.....	.....	.....

*Including liquid latex. †Stocks on hand the last of the month or year. ‡Statistical Bulletin of the International Rubber Regulation Committee. §Stocks at U. S. A., U. K., Singapore and Penang, Para, Manaos, and afloat.

RMP
ANTIMONY
FOR RED RUBBER

. . . . The utmost in pleasing appearance with no deteriorating effect whatever.

●

RARE METAL PRODUCTS CO.
BELLEVILLE, N. J.

★

TO PRODUCERS OF RUBBER BOOTS AND SHOES

WE are manufacturers of the Patten Air Lift Motor driven machine used for cutting taps and soles from sheet rubber.

In the hands of competent and experienced operators this machine should cut from 3,500 to 5,000 pairs per day, producing a sole or tap with beveled edge of 27° to 90°, and is the latest up-to-date type of machine for this purpose.

We are in position to make delivery within thirty days after receipt of order.

★

WELLMAN COMPANY
MACHINISTS
MEDFORD, MASS., U.S.A.

SCOTT PLASTOMETER

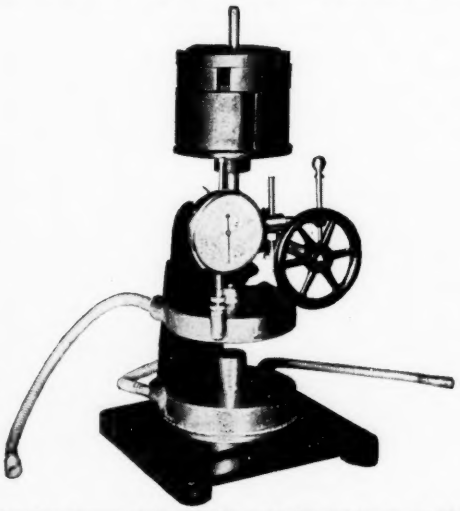


Illustration shows plain spindle type for loads up to 20 lbs.

PRICE $75.00

Other models for maximum pressures of 100 lbs. (price $130.00) and 200 lbs. (price $250.00).

Accurate Jewel Type Gauges

Hollow platens for control of temperature. Permits its use in the mill room as no controlled temperature oven is required.

Lower plate furnished either flat or the post type as illustrated. Post maintains a constant area of specimen under the pressure platen.

HENRY L. SCOTT CO., Box 963, Providence, R. I.

MT. VERNON WOODBERRY MILLS, INC.

TURNER, HALSEY CO.
SALES AGENT
40 WORTH ST., NEW YORK

BALTIMORE BOSTON — BRANCHES CHICAGO NEW ORLEANS — SAN FRANCISCO ST. LOUIS

New Goods and Specialties

Quick Acting Couplers

QUICK acting couplers are especially adaptable for attaching and disconnecting airline equipment. In as brief a time as plugging in an electric socket, grease guns, spray guns, car lifts, air chucks, blow guns, chuck gages, etc., may be interchanged at one or several pipe outlets as well as at the working end of the hose. These couplers are made of cadmium plated steel, simple of design, absolutely airtight with a free flow of air when in operation. The check unit contains these automatic shut off parts, a tripping deflator and a fine rubber washer, replaceable when worn from long service. A. Schrader's Son, Division of Scoville Mfg. Co.

Pneumatic Tractor Tire

THE new rear-wheel tractor tire, designated R-4, is the last word in tire equipment for farm service, incorporating all the latest features in design that its designers have discovered in three years of actual experience in building tires for the farm field. Specially designed for rear wheel service, this tire is made in practically all sizes adaptable for farm tractor wheels. Its advantages cited by the manufacturer follow. More traction is developed, with 38% more rubber added to the tread. Increased tread thickness adds 35% more to tire life. Self-cleaning tread design throws out mud, will not plug up and lose traction. Equal amount of rubber between center and outer tread contact area results in slow, even tread wear, plus tremendous increase in traction qualities. Sidewalls are amply protected against scuffing when working furrows or even over loose soil, at the same time giving increased sidewall traction. Shoulder cleats are wider, to prevent rapid tread wear on the shoulders and resist snagging on rough stubble or roots. Every tire is marked on the sidewall with directional arrow pointing the correct direction of rotation for best traction.

Tractor Tire

The front tire, sold in combination with the new product for rear-wheel service, is made with deep circumferential grooves to resist side slippage on short turns. They enable the operator to follow ridge rows in cultivating. The B. F. Goodrich Co.

Rubber in a Mattress

A PRODUCT that admits of many varied uses is Hairlock, a rubber treated hair made by The B. F. Goodrich Co. One such development is the mattress, here illustrated.

By a new and interesting process the hair, lightly matted or interlaced, is curved into a multitude of little figure-eight springs and held permanently in a uniform layer 7/8-inch thick. Between these Hairlock layers appear steel springs. The former, so different from the latter, do not seem quite so resilient, but are far more soft and firmly support the sleeper's body. The entire assembly of Hairlock and steel is smothered in deep layers of felted cotton at top, bottom, and sides, and all is encased in a damask jacket.

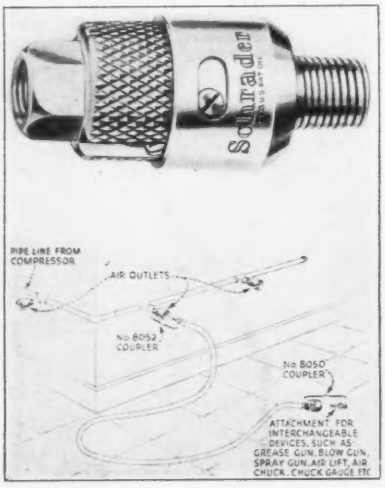
The mattress thus has no undesirable tufts or buttons, for cotton cannot shift on Hairlock. Pressure is uniform, even when a weight is supported. Then, too, the tiny coils of hair grip the cotton evenly and firmly throughout the whole length and breadth of the mattress. Akron Mattress Co.

Cretecote

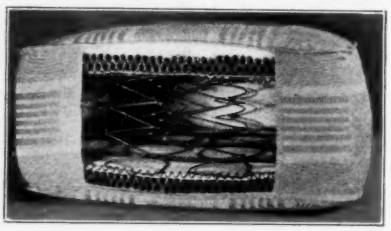
CRETECOTE is a material for rendering concrete surfaces sanitary, moisture-proof, and dust-proof. It contains rubber resin and comes in paint form in a range of seven colors besides black and white. This material combines the elasticity of live rubber with the density of hard rubber, to give it durable wearing quality. Penola Inc.

Rubber Seat

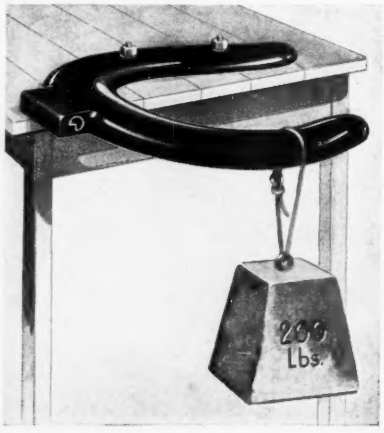
THE solid rubber toilet seat pictured is built with a core of light-weight hard rubber covered with 3/16-inch super-hard ebonite. This seat embodies very definite advantages over those which have cores of wood or other composition. It cannot split, crack, warp, or peel because the coefficients of expansion of the core and outer shell are the same. The strength of the article is indicated by the test shown where one branch of the seat is bolted on a table while the other supports a weight of 200 pounds. Upon release of this weight the part springs back to its normal position. Seats of this construction are produced with and without covers to conform to standard forms of bowls and are welcomed by users in the industrial field. New Process Rubber Co.


Schrader
PIPE LINE FROM COMPRESSOR
AIR OUTLETS
No. 8052 COUPLER
No. 8050 COUPLER
ATTACHMENT FOR INTERCHANGEABLE DEVICES, SUCH AS GREASE GUN, BLOW GUN, SPRAY GUN, AIR LIFT, AIR CHUCK, CHUCK GAUGE ETC.

Schrader Quick Acting Coupler



Cross-Section of Hairlock Mattress



Plymouth Hard Rubber Toilet Seat

CLASSIFIED ADVERTISEMENTS

ALL CLASSIFIED ADVERTISING MUST BE PAID IN ADVANCE

GENERAL RATES	SITUATIONS WANTED RATES	SITUATIONS OPEN RATES
Light face type $1.00 per line (ten words)	Light face type 40c per line (ten words)	Light face type 75c per line (ten words)
Bold face type $1.25 per line (eight words)	Bold face type 55c per line (eight words)	Bold face type $1.00 per line (eight words)

Allow nine words for keyed address. *Replies forwarded without charge.*

SITUATIONS WANTED

IMMEDIATELY AVAILABLE: EXPERIENCED RUBBER COMpounder and technologist. Thorough knowledge of compounding, production, and development. Mechanicals, hard rubber, and dipped goods, including latex. Graduate chemist. Have been factory superintendent past year. Address Box No. 579, care of INDIA RUBBER WORLD.

FOREMAN WANTING POSITION IN CALENDER AND MILL room. 18 years' experience in all kinds of rubber goods. Small plant preferred. Address: 22 Watters Ave., Akron, O.

EXPERIENCED RUBBER CHEMIST, FAMILIAR WITH COMpounding and development of factory stocks, also mixing, curing and stress-strain graphs of test slabs, aging tests and analyses. Address Box No. 581, care of INDIA RUBBER WORLD.

WANTED: FOREMAN'S POSITION, EXPERIENCED BACKING and combining shoe materials, manufacturing quarter lining and pyroxylin, thorough knowledge of compounding, at present employed but desire to change. Address Box No. 582, care of INDIA RUBBER WORLD.

PRACTICAL MAN, WITH 25 YEARS OF EXPERIENCE IN RUBberizing of all kinds of fabrics, spread or calendered, single or double texture, suede cloth, quarter lining, leatherette, auto topping, luggage and bags cloth, gas mask, cloth for shoe and slipper trade. Best of references. Up-to-date compounder. Address Box No. 583, care of INDIA RUBBER WORLD.

SITUATIONS OPEN

RUBBER CHEMIST WANTED: RUBBER CHEMIST WHO IS THOROughly experienced in sueding and proofing, and capable of carrying developments of standard and new coatings through both laboratory and manufacing stages. Experience in latex desirable. State age, experience, and salary expected in first letter. Address Box No. 574, care of INDIA RUBBER WORLD.

MAN TO TAKE CHARGE OF TRIMMING DEPARTMENT. MUST have thorough knowledge of, and experience with, latest methods of trimming small rubber parts such as bumpers, washers, etc.—plumbing specialties and molded rubber goods. Reply in detail, stating experience, etc. All correspondence held in strict confidence. Address Box No. 576, care of INDIA RUBBER WORLD.

SALESMAN—PLASTICS: UNUSUAL OPPORTUNITY OPEN TO high-grade salesman experienced in the sale of Bakelite or rubber molded industrial products. Established company serving new fields offers large income possibilities on salary or commission basis. State details and experience for consideration. Address Box No. 577, care of INDIA RUBBER WORLD.

LATEX DEVELOPMENT MAN QUALIFIED IN COLLOIDAL chemistry and with practical knowledge in application of liquid latex as in dipped goods, sponge rubber, or fabric coatings. Eastern location with responsible organization. Address Box No. 584, care of INDIA RUBBER WORLD.

WANTED: TECHNICAL SALESMAN. ONE FAMILIAR WITH rubber industry preferred. Eastern territory. Address Box No. 585, care of INDIA RUBBER WORLD.

AUTOMOTIVE HYDRAULIC BRAKE HOSE

We manufacture braiding machinery for wire and cotton braiding as used on Automotive Hydraulic Brakes; also for Air, Steam, Water, Pressure Greasing, and Vacuum Cleaning.

Information gladly furnished on request.

NEW ENGLAND BUTT COMPANY
Dept. I-11, Providence, R. I.
Chicago Office: 20 North Wacker Drive

The Sponge Rubber Products Co.
DERBY, CONN.
Manufacturers of
FINE SPONGE RUBBER
for all purposes
Sheet • Molded • Die Cut

Wilbow
THE WILLIAMS-BOWMAN RUBBER COMPANY
MANUFACTURERS OF
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IMMEDIATE DELIVERIES FROM STOCK
MILLS, CALENDERS, TUBERS, HYDRAULIC PRESSES, PUMPS,
VULCANIZERS, TIRE MAKING EQUIPMENT, MOULDS, ETC.
UNITED RUBBER MACHINERY EXCHANGE
319-323 FRELINGHUYSEN AVE., Cable Address "Urme" NEWARK, N. J.

(*Advertisements continued on page* 83)

NEW PUBLICATIONS

"Ovac—A Rubber Accelerator." Naugatuck Chemical Division of U. S. Rubber Products, Inc., 1790 Broadway, New York, N. Y. This bulletin describes the characteristics and applications of a new tire tread accelerator together with tire tread test recipe, description of the T-50 test, and test data on tensile-elongation, flex cracking, the effect of fatty acid, and the use of Ovac in zinc stocks.

"Condor Compensated Belt." The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc., Passaic, N. J. This broadside notes the many advantages of this low-tension rubber belt with equalized ply stresses. Its design is illustrated, as also are typical compensated belt drives, followed by tables of data, etc.

"Federal Precision Measuring Instruments." Federal Products Corp., Providence, R. I. This fifty-nine-page catalog illustrates and describes an extensive line of dial indicating precision gages essential to accuracy in many manufacturing operations such, for example, as those that feature the cost and construction of pneumatic tires and various mechanical rubber specialties, etc.

"Controlling Costs and Operation of Business Automobiles." Metropolitan Life Insurance Co., One Madison Ave., New York, N. Y. This study presents the findings of a survey of fifty-three companies in a variety of enterprises throughout the country. It considers such subjects as: Should the company or the employe own the car? In what form should reimbursement for expenses be made? What are some of the predominating policies with relation to financing new cars, insurance, trade-ins, personal use of cars? The survey disclosed that opinion and practice concerning whether business cars should be company- or employe-owned are about equally divided. It disclosed also that there are three major methods of reimbursement for expenses: company repays actual expenses; company extends a flat allowance fixed either on the basis of mileage or time; and company establishes a sliding scale with variations in rate depending upon differences in distance traveled, in territories, or in types of road. The first of these three methods generally is used by companies whose policy dictates company ownership; seventeen of the eighteen companies reporting in detail on this point used the actual expense method. The other two methods apply in companies in which the employes use their own cars on company business. Details of the flat and scale allowances are given in the report, broken down for type of industry.

While the supply lasts, copies of this report are available upon application to the Policyholders Service Bureau, Metropolitan Life Insurance Co.

The du Pont Magazine. E. I. du Pont de Nemours & Co., Inc., Wilmington, Del. Among the very interesting applications of du Pont products to modern life and industry described in the October issue of this magazine is the revolutionary one of uniting the vamps and soles of leather shoes by special latex adhesives, which system is rapidly superseding sewing for that purpose on both women's and men's shoes.

Witcombings. Wishnick-Tumpeer, Inc., 295 Madison Ave., New York, N. Y. The August-September number of this newsy publication contains the announcement of the recent removal of the company's office to a central uptown location in New York. Also appearing are many items of rubber interest including the program of the meeting of the Division of Rubber Chemistry, A.C.S., at Akron, O.

The Vanderbilt News. R. T. Vanderbilt Co., 230 Park Ave., New York, N. Y. The September-October issue contains an interesting array of articles on important phases and results of compounding, improving the quality of dispersions, making dispersions of complete latex formulae, as well as a number of up-to-date compounding suggestions.

"An Outline of Carbon Black." J. M. Huber, Inc., 460 W. 34th St., New York, N. Y. In this sixteen-page booklet the author, I. Drogin, chief chemist of the Huber company, conveys to the reader an excellent understanding of the development and growth of the carbon black industry, the nature of the gas used, methods of production, plant construction and equipment, control and testing of product, and its industrial utilization. Copies of this informative booklet are available free on request to the Huber company.

"Instruments—Temperature, Pressure, Flow, Humidity, Level. Bulletin 174-1." The Foxboro Co., Foxboro, Mass. Instrument essentials are specified, and a wide range of instruments is illustrated and described for process control in industry.

"Fisk and the Air Flight Principle." The Fisk Tire Co., Inc., Chicopee Falls, Mass. This pictorial record shows progressively the steps in the manufacture of pneumatic tires and inner tubes from preparation of the stock to the inspection of the finished products. The excellently clear large pictures, their descriptive titles, and the general text of the booklet combined give the reader an excellent substitute for an actual trip through the plant.

"Facts about Fulflex." Carr Mfg. Corp., Bristol, R. I. This brochure of sixteen pages briefly outlines the method of manufacturing Fulflex brand of cut rubber thread. Its advantages, suggestions for handling, table of sizes, and corresponding yardage are given.

"Tetrone A. Laboratory Report No. 157 (Revised October 1, 1935)." E. I. du Pont de Nemours & Co., Inc., Wilmington, Del. Tetrone A is intended primarily for vulcanization without added sulphur. This report deals with the mechanism of vulcanization without sulphur, Tetrone A compounding practice, effect of fillers, effect of other compounding ingredients, effect of secondary accelerators, aging properties, and high temperature cures. A number of mixings and test data are given showing the specific value of Tetrone A in practice especially in oil resistant stocks. The use of Tetrone A in latex, with and without sulphur, is covered in detail in Laboratory Report No. 185.

"The Products of Southern Alkali." Southern Alkali Corp., Corpus Christi, Texas. This catalog contains concise descriptions of soda ash, modified sodas, solid, liquid, and flake cautic soda, and caustic ash.

"American Standard Specifications for Cotton Rubber Lined Fire Hose for Public and Private Fire Department Use (L3-1935; A.S.T.M. D 296-35)." American Standards Association or American Society for Testing Materials, 260 S. Broad St., Philadelphia, Pa.

"Tag No. 40 Controller." C. J. Tagliabue Mfg. Co., Park and Nostrand Aves., Brooklyn, N. Y. This illustrated bulletin describes a new temperature controller for liquids heated by steam. Indicating and non-indicating types in nine convenient temperature ranges and three pressure ranges are available in this new controller.

"Foxboro Potentiometer Controllers for Industrial Temperatures. Bulletin No. 202." The Foxboro Co., Foxboro, Mass. The particular automatic temperature controllers described are of the indicating, non-recording type and regulate temperature by electrical operation of suitable heat supply valves or devices.

AXF

AXF plastic is a new product developed by the Research and Development Departments of U. S. Rubber Products, Inc., and offered for sale by Naugatuck Chemical. The principal use of AXF is in oil resistant products in conjunction with DuPrene, Thiokol, or rubber. It plasticizes DuPrene and Thiokol and improves their processing qualities and acts as an anti-scorch with DuPrene in storage and in processing. This plastic also increases the oil resistance more than inert fillers and at the same time retains the elasticity properties to a greater extent.

AXF is a chemically inert, pure, hydrocarbon material, insoluble and non-swelling in practically all solvents. It can be handled and processed like rubber, but is not hardened by heat and sulphur. Its specific gravity is 1.097.

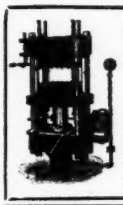
ERNEST JACOBY & CO.

Crude Rubber
Liquid Latex
Carbon Black
Clay

Stocks of above carried at all times

BOSTON MASS.

Cable Address: Jacobite Boston



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Plain or Semi-automatic—Any Size or pressure—Pumps, Valves, etc.

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INTERNATIONAL PULP CO.
41 Park Row, NEW YORK, N. Y.
SOLE PRODUCERS
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REG. U. S. PAT. OFF.

For Flat Stationary or Moving Curved Surfaces

Surface Temperatures
Use the "Alnor" Pyrocon
Ideal for rolls, molds, plates, platens and plastic material temperatures.
Write for bulletin.
ILLINOIS TESTING LABORATORIES, Inc.
424 N. La Salle Street Chicago, Illinois

Genasco (M.R.) Hydrocarbon
(SOLID OR GRANULATED)
A hard, stable compound—produced under the exacting supervision of an experienced and up-to-date laboratory. Aging tests have proved Genasco to be *always* of uniform quality. Shipped to all parts of the world in metal drums. Stocks carried at Maurer, N. J. and Madison, Ill.
THE BARBER ASPHALT COMPANY
Philadelphia New York Chicago St. Louis

CORONA GOLF BALL WINDING MACHINES
Used everywhere by manufacturers. Rented on a monthly basis in U. S. Sold outright in foreign countries.
Illustrated circular on request.
Corona Manufacturing Company
Mount Airy, Philadelphia, Pa., U. S. A.

Classified Advertisements

Continued

BUSINESS OPPORTUNITIES

DO YOU WANT REPRESENTATION IN THE United Kingdom? Established manufacturer's agent in England can either buy for you or sell your goods. Can use accelerators, carbon black, sulphur, rubber softeners, or any related product. Address Box No. 575, care of INDIA RUBBER WORLD.

MODERN RUBBER CHEMICALS & COMPOUNDS

An old established firm, having valuable connections with rubber manufacturers throughout the United Kingdom for many years, wishes to handle additional commodities on an exclusive merchant or agency basis. Anything new particularly interesting. Address Box No. 578, care of INDIA RUBBER WORLD.

MACHINERY AND SUPPLIES FOR SALE

BUTTERWORTH CELL DRIER, SEVEN PLATE 50" wide, in perfect condition. The Cincinnati Rubber Mfg. Co., Cincinnati, Ohio.

Headquarters for
RUBBER MILL MACHINERY
L. ALBERT & SON
Trenton, N. J. • Akron, Ohio

GUAYULE RUBBER
Washed and Dry, Ready for Compounding
PLANTATION RUBBER
From Our Own Estates in Sumatra
CONTINENTAL RUBBER COMPANY OF NEW YORK
745 Fifth Avenue New York

A Schulman Inc.
SCRAP RUBBER
CRUDE RUBBER
HARD RUBBER DUST
MAIN OFFICE
608 AKRON SAVINGS & LOAN BLDG, AKRON, OHIO - - BRANCHES: 420 STUART STREET BOSTON, MASS.

(*Advertisements continued on page* 85)

Tire Production Statistics

	Pneumatic Casings—All Types			Solid and Cushion Tires		
	Inventory	Production	Total Shipments			
1933	7,110,456	36,243,384	35,274,970	1933	26,271	130,987	126,990
1934	9,171,335	45,815,763	45,285,955	1934	34,710	197,497	187,152
1935				1935			
Jan.	10,085,737	4,487,679	3,552,737	Jan.	31,581	21,510	20,300
Feb.	11,183,674	4,251,183	3,188,772	Feb.	.....	17,657	16,183
Mar.	11,325,010	4,215,214	4,078,007	Mar.	.....	17,603	20,224
Apr.	10,673,140	4,376,383	4,989,291	Apr.	.....	20,002	21,783
May	10,796,842	4,049,915	3,945,364	May	.....	22,533	21,150
June	10,432,738	3,792,537	4,134,489	June	.....	16,067	20,053
July	8,584,018	3,425,879	5,283,696	July	.....	21,904	20,287
Aug.	7,570,902	3,873,016	4,597,081	Aug.	.....	31,970	30,127

	Inner Tubes—All Types		
1933	6,251,941	34,044,689	33,112,472
1934	8,904,496	44,840,971	43,694,130
1935			
Jan.	9,332,489	4,131,004	3,610,371
Feb.	10,151,721	4,046,062	3,261,488
Mar.	10,094,170	3,999,030	4,043,350
Apr.	9,864,446	4,131,658	4,319,648
May	10,296,437	3,775,145	3,347,258
June	9,748,054	3,376,082	3,903,645
July	7,765,239	3,153,068	5,111,012
Aug.	6,730,932	3,776,743	4,419,013

	Cotton and Rubber Consumption Casings, Tubes, Solid and Cushion Tires		Consumption of Motor Gasoline (100%) Gallons
	Cotton Fabric Pounds	Crude Rubber Pounds	
1933	148,989,293	512,489,423	15,880,746,000
1934	196,069,495	697,558,218	17,063,298,000
1935			
Jan.	19,607,932	72,968,356	1,178,604,000
Feb.	18,058,726	66,463,131	1,133,376,000
Mar.	17,581,651	64,583,859	1,343,874,000
Apr.	17,944,131	71,286,972	1,515,129,000
May	17,328,212	67,822,472	1,641,738,000
June	15,802,601	58,152,530	1,591,128,000
July	14,867,923	56,042,744	1,730,526,000
Aug.	16,568,852	58,726,516	1,801,842,000

Rubber Manufacturers Association, Inc., figures representing approximately 97% of the industry for 1934 and 1935 and 80% for previous years, with the exception of gasoline consumption.

Canadian Footwear Exports

August, 1935

To	Boots and Shoes Prs.	Boots and Shoes $	Canvas Rubber-Soled Shoes Prs.	Canvas Rubber-Soled Shoes $
Belgium	778	1,314	...	...
France	2,496	6,421	681	506
Irish Free State	419	846	...	...
Netherlands	2,216	3,420	...	...
Norway	879	1,094	...	...
Spain	180	137	...	...
Switzerland	2,469	1,895	200	130
United Kingdom	217,588	178,638	40,489	18,226
United States	...	...	2	2
Br. Honduras	60	30	859	442
Costa Rica	...	...	184	92
Newfoundland	28,007	26,843	243	117
Bermudas	71	36	48	49
Barbados	...	...	1,824	894
Jamaica	...	...	1,613	692
Trinidad and Tobago	108	42	2,812	1,328
Oth. Br. W. Ind.	...	...	1,099	485
Neth. W. Ind.	...	...	20	12
Argentina	90	75	35,159	20,564
Chile	15	13	...	...
British Guiana	101	45	791	554
British India	...	...	24	18
Australia	3	4	...	...
Fiji Islands	...	...	75	40
New Zealand	1,251	2,328	45,559	26,615
Br. S. Africa	3,638	5,768	8,195	4,626
French Africa	...	...	25	21
Portuguese Afr.	...	...	200	93
Total	260,369	228,949	140,102	75,506

U. S. Crude and Waste Rubber Imports for 1935

	Plantations	Latex	Paras	Africans	Centrals	Guayule	Manicoba and Matto Grosso	Totals 1935	Totals 1934	Balata	Miscellaneous	Waste
Jan. ..... *tons*	41,188	599	201	30	41	..	..	42,059	46,204	26	553	..
Feb.	33,722	388	1,208	14	51	..	..	35,383	31,032	73	194	29
Mar.	42,373	967	513	167	21	..	..	44,041	44,605	55	659	40
Apr.	41,857	1,089	531	63	5	..	..	43,545	45,662	60	644	14
May	25,256	1,106	294	60	..	50	..	26,766	47,954	55	474	16
June	36,833	860	467	80	..	100	..	38,340	49,683	135	521	20
July	45,456	973	291	46	14	100	..	46,880	41,530	84	553	25
Aug.	37,199	1,170	166	65	5	50	..	38,655	33,248	25	484	18
Sept.	33,329	940	196	70	17	17	..	34,569	28,835	83	276	30
Total 9 mos., 1935 ..... *tons*	337,213	8,092	3,867	595	154	317	..	350,238	.....	596	4,358	192
Total 9 mos., 1934 ..... *tons*	357,236	8,914	2,033	136	34	400	..	.....	368,753	997	5,170	610

Compiled from The Rubber Manufacturers Association, Inc., statistics.

United States Latex Imports

Year	Pounds	Value
1931	10,414,712	$884,355
1932	11,388,156	601,999
1933	24,829,861	1,833,671
1934	29,276,134	3,633,253
1935		
Jan.	1,898,962	287,583
Feb.	1,282,941	179,583
Mar.	2,889,525	354,654
Apr.	3,854,892	415,100
May	3,197,450	380,844
June	1,324,776	152,665
July	2,563,366	303,518
Aug.	2,764,572	370,431

Data from Leather and Rubber Division, United States Department of Commerce, Washington, D. C.

World Net Imports of Crude Rubber

Year	U.S.A.	U.K.	Australia	Belgium	Canada	Central Europe	France	Germany	Italy	Japan	Russia	Rest of the World	Total
1931	476,200	85,200	7,700	11,000	25,300	15,200	47,800	39,200	10,100	43,500	30,700	20,800	812,700
1932	393,800	43,500	12,400	9,500	20,900	15,800	41,700	45,000	15,300	56,100	30,000	26,800	710,800
1933	398,400	73,300	13,500	11,200	19,300	18,900	63,100	54,100	19,300	66,900	30,800	30,100	798,900
1934	438,941	158,481	9,642	9,116	28,439	23,427	50,405	59,330	21,403	69,934	47,272	43,166	959,556
1935													
Jan.	39,546	20,383	1,099	419	2,670	1,966	5,678	4,286	1,648	4,402	3,446	3,673	89,216
Feb.	45,999	15,609	848	399	1,558	2,547	4,670	3,513	4,357	5,585	1,810	3,599	90,494
Mar.	44,772	12,810	1,458	240	2,710	1,463	4,085	6,353	1,582	4,423	4,624	3,592	88,112
Apr.	40,061	11,574	1,150	520	1,063	1,491	3,368	5,820	1,653	6,635	3,387	3,539	80,261
May	29,962	12,498	671	982	3,929	1,565	3,900	6,050	935	5,432	1,937	3,682	71,543
June	31,410	10,253	496	1,065	1,435	1,576	3,270	4,551	1,831	3,375	3,088	3,693	66,043
July	47,694	9,454	520	572	1,319	1,079	*3,500	4,929	1,298	4,486	*2,500	*3,000	80,351

* Estimate. Source: *Statistical Bulletin of the International Rubber Regulation Committee.*

Shipments of Crude Rubber from Producing Countries

Year	Malaya including Brunei and Labuan	N.E.I.	Ceylon	India	Burma	North Borneo	Sarawak	Siam	French Indo-China	Total	Philippines and Oceania	Africa	South America	Mexican Guayule	Grand Total
1931	423,000	257,000	62,300	5,400	4,200	6,200	10,400	3,600	11,000	783,100	900	3,500	12,200	0	799,700
1932	406,000	211,000	49,300	1,100	3,000	5,400	7,100	3,000	13,500	699,400	800	2,100	6,500	0	708,800
1933	445,800	280,800	63,800	1,500	3,400	7,800	11,100	7,000	15,900	837,100	1,100*	2,000	10,100	0	850,300
1934	467,030	379,401	79,068	5,735	5,719	11,086	17,708	17,714	19,628	1,003,089	1,233*	2,921	9,143	398	1,016,784
1935															
Jan.	41,665	18,726	6,294	1,549	945	1,238	1,574	2,614	2,575	77,180	105	467	2,108	0	79,860
Feb.	32,824	27,835	5,551	331	489	760	1,922	2,288	2,018	74,018	156	254	1,347	0	75,775
Mar.	34,047	22,402	1,720	257	471	773	1,901	2,076	1,440	65,087	82	525	992	0	66,686
Apr.	37,442	26,156	3,749	139	263	846	1,895	1,661	2,827	74,978	134	185	1,146	0	76,443
May	27,740	36,289	4,473	265	484	848	2,003	2,752	1,800	76,654	133	315	756	50	77,908
June	31,198	29,337	3,525	651	383	603	2,020	2,869	2,516	73,102	142	393	895	103	74,635
July	37,826	20,990	4,106	351	229	1,164	1,783	1,939	1,957	70,345	100*	450*	407	52	71,354
Aug.	40,995	21,030	5,683	732	102	566	776	2,062	3,662	75,608	100*	500*	1,207	50*	77,465

*Estimate. Source: *Statistical Bulletin of the International Rubber Regulation Committee.*

BROCKTON TOOL COMPANY

103 BELMONT STREET QUALITY HEEL MOULDS BROCKTON, MASS.

MOULDS FOR BAKELITE—HARD RUBBER—MECHANICAL GOODS—RUBBER SOLES

Classified Advertisements

Continued

MACHINERY AND SUPPLIES FOR SALE—Continued

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THE STAMFORD RUBBER SUPPLY CO. STAMFORD CONN.

Makers of FACTICE Since 1900
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Dominion of Canada Statistics

Imports of Crude and Manufactured Rubber

	June, 1935		Three Months Ended June, 1935	
UNMANUFACTURED	Pounds	Value	Pounds	Value
Crude rubber, etc.	3,215,286	$369,733	14,396,359	$1,639,674
Gutta percha	1,683	1,792	5,541	3,251
Rubber, recovered	365,000	17,273	1,923,500	91,910
Rubber, powdered, and gutta percha scrap	373,600	2,871	708,600	7,516
Balata	1,159	198	3,650	540
Rubber substitute	31,500	12,029	102,700	27,909
Totals	3,988,228	$403,896	17,140,350	$1,770,800
PARTLY MANUFACTURED				
Hard rubber sheets and rods	2,997	$2,388	7,602	$5,750
Hard rubber tubes	.....	458	.....	1,569
Rubber thread not covered	5,922	3,820	18,730	12,200
Totals	8,919	$6,666	26,332	$19,519
MANUFACTURED				
Hard rubber comb blanks	.....	.....	.....	$2,077
Belting	.....	$9,491	.....	24,357
Hose	.....	6,968	.....	26,033
Packing	.....	4,037	.....	16,437
Boots and shoes, *pairs*	18,470	5,638	68,492	27,056
Clothing, including waterproofed	.....	1,097	.....	6,583
Raincoats, *number*	442	1,572	2,542	9,912
Gloves, *dozen pairs*	256	510	972	1,938
Hot water bottles	.....	437	.....	854
Liquid rubber compound	.....	655	.....	2,343
Tires, bicycle, *number*	5,659	2,803	23,008	9,343
Pneumatic, *number*	1,609	16,215	6,141	52,322
Inner tubes, *number*	240	864	791	2,348
Solid for automobiles and motor trucks, *number*	72	1,230	129	3,955
Other solid tires	.....	584	.....	2,282
Mats and matting	.....	7,699	.....	29,853
Cement	.....	4,884	.....	29,351
Golf balls, *dozen*	5,460	15,056	18,924	50,704
Heels, *pairs*	5,737	355	13,489	895
Other rubber manufactures	.....	65,301	.....	193,705
Totals	.....	$145,396	.....	$492,348
Totals, rubber imports	.....	$555,958	.....	$2,282,667

Exports of Domestic and Foreign Rubber Goods

	Produce of Canada Value	Reexports of Foreign Goods Value	Produce of Canada Value	Reexports of Foreign Goods Value
UNMANUFACTURED				
Waste rubber	$6,346	.....	$12,700	.....
MANUFACTURED				
Belting	$47,731	.....	$119,886	.....
Canvas shoes with rubber soles	151,668	.....	414,591	.....
Boots and shoes	77,993	.....	216,468	.....
Clothing, including waterproofed	21,338	.....	47,131	.....
Heels	14,192	.....	50,156	.....
Hose	15,812	.....	40,676	.....
Soles	13,510	.....	53,527	.....
Tires, bicycle	.....	.....	16	.....
Pneumatic	592,465	.....	1,652,095	.....
Inner tubes	41,283	.....	121,631	.....
Solid	2	.....	2	.....
Other rubber manufactures	44,581	$823	144,979	$3,617
Totals	$1,020,575	$823	$2,861,158	$3,617
Totals, rubber exports	$1,026,921	$823	$2,873,858	$3,617

Rubber Trade Inquiries

The inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The Editor is therefore glad to have those interested communicate with him.

No.	INQUIRY
1905	Manufacturer of rubber molds for plaster casts.
1906	Manufacturer of rubber anatomical models or displays.
1907	Manufacturer of the following grades of mineral rubber: A. 370; F. 371; and G. 371.
1908	Manufacturer of corrugated rubber mats, matting, and stair treads.
1909	Manufacturer of rubber shampoo brush.
1910	Manufacturer of rubber heel equipment.
1911	Manufacturer of sponge rubber heel cushions.
1912	Supplier of used vacuum driers and rubber washers.
1913	Manufacturer of small rubber heads.
1914	Manufacturer of Hawkinson tire retreader.
1915	Manufacturer of men's rubber swimming trunks.
1916	Manufacturer of haircloth upholstery material.
1917	Manufacturer of small sponge rubber pads.
1918	Manufacturer of cord hose.
1919	Manufacturer of rubber keys for typewriters.
1920	Manufacturer of molded sponge rubber in strips six feet or over.
1921	Manufacturer of dipped goods.
1922	Manufacturer of trays of latex.
1923	Manufacturer of blocks of molded sponge rubber 2 by 3 inches and ¼-inch thick.

Rubber Goods Production Statistics

		1935	1934
TIRES AND TUBES*		July	July
Pneumatic casings			
Production	*thousands*	3,426	3,252
Shipments, total	*thousands*	5,284	4,033
Domestic	*thousands*	5,212	3,954
Stocks, end of month	*thousands*	8,584	9,154
Solid and cushion tires			
Production	*thousands*	22	18
Shipments, total	*thousands*	20	18
Domestic	*thousands*	20	17
Stocks, end of month	*thousands*	36	30
Inner tubes			
Production	*thousands*	3,153	3,425
Shipments, total	*thousands*	5,111	4,193
Domestic	*thousands*	5,053	4,133
Stocks, end of month	*thousands*	7,765	7,812
Raw material consumed			
Fabrics	*thous. of lbs.*	14,868	13,267
MISCELLANEOUS PRODUCTS			
Rubber bands, shipments	*thous. of lbs.*	....	220
Rubber-proofed fabrics, production, total	*thous. of yds.*	....	3,332
Auto fabrics	*thous. of yds.*	....	526
Raincoat fabrics	*thous. of yds.*	....	1,269
Rubber flooring, shipments	*thous. of sq. ft.*	....	372
Rubber and canvas footwear			
Production, total	*thous. of prs.*	3,147	3,587
Tennis	*thous. of prs.*	702	843
Waterproof	*thous. of prs.*	2,445	2,744
Shipments, total	*thous. of prs.*	3,737	4,611
Tennis	*thous. of prs.*	1,507	1,174
Waterproof	*thous. of prs.*	2,230	3,436
Shipments, domestic, total	*thous. of prs.*	3,667	4,594
Tennis	*thous. of prs.*	1,490	1,170
Waterproof	*thous. of prs.*	2,177	3,425
Stocks, total, end of month	*thous. of prs.*	18,767	19,935
Tennis	*thous. of prs.*	4,836	6,515
Waterproof	*thous. of prs.*	13,931	13,419
Rubber heels			
Production	*thous. of prs.*	17,836	15,903
Shipments, total	*thous. of prs.*	17,492	15,656
Export	*thous. of prs.*	233	346
Repair trade	*thous. of prs.*	4,810	4,485
Shoe manufacturers	*thous. of prs.*	12,449	10,825
Stocks, end of month	*thous. of prs.*	34,746	38,597
Rubber soles			
Production	*thous. of prs.*	3,599	3,082
Shipments, total	*thous. of prs.*	3,597	3,277
Export	*thous. of prs.*	11	2
Repair trade	*thous. of prs.*	384	318
Shoe manufacturers	*thous. of prs.*	3,202	2,955
Stocks, end of month	*thous. of prs.*	3,875	4,933
Mechanical rubber goods, shipments			
Total	*thous. of dollars*	....	3,834
Belting	*thous. of dollars*	....	1,001
Hose	*thous. of dollars*	....	1,362
Other	*thous. of dollars*	....	1,472

*Data for 1934 are estimated to represent approximately 97% of the industry.

Source: *Survey of Current Business,* Bureau of Foreign & Domestic Commerce, Washington, D. C.

Imports by Customs Districts

	August, 1935 *Crude Rubber		August, 1934 *Crude Rubber	
	Pounds	Value	Pounds	Value
Massachusetts	9,072,267	$1,037,840	8,729,634	$1,024,006
Buffalo	.....	.....	2,746	275
St. Lawrence	230	21	.....	.....
New York	72,824,521	8,523,202	52,462,992	5,938,584
Philadelphia	484,665	57,425	968,881	106,487
Maryland	2,096,749	234,222	4,413,477	475,928
Mobile	600,876	61,898	.....	.....
New Orleans	621,305	73,099	1,131,905	100,619
Los Angeles	6,310,798	676,945	5,302,864	572,946
San Francisco	649,600	76,882	147,740	16,082
Oregon	11,200	980	33,600	2,943
Washington	.....	.....	11,200	990
Hawaii	224	28	.....	.....
Ohio	250,158	46,945	41,927	4,165
Totals	92,922,593	$10,789,487	73,246,966	$8,243,025

*Crude rubber including latex dry rubber content.

No.	INQUIRY
1924	Manufacturer of lightweight materials suitable for raincoats to be worn in tropical climates.
1925	Manufacturer of rubber snakes 16 to 24 inches long, with head raised or with a head that could be raised by pressing on the snake.
1926	Manufacturer of "Revolite," a coated fabric.
1927	Information wanted on V-belt splicing.
1928	Manufacturer of lasts for tennis shoes.
1929	Manufacturer of white duck canvas for footwear.
1930	Manufacturer of rubber cements.
1931	Manufacturer of rubber ink for stenciling designs on a rubber composition.
1932	Manufacturer of mechanical specialties.

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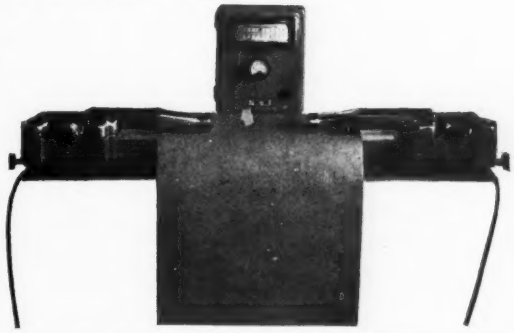

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Eastern States Representative
BLACK ROCK MFG. CO., Bridgeport, Conn.

United States Statistics

Imports for Consumption of Crude and Manufactured Rubber

	July, 1935		Seven Months Ended July, 1935	
UNMANUFACTURED—*Free*	Pounds	Value	Pounds	Value
Crude rubber	105,250,110	$11,666,577	626,097,645	$71,453,426
Liquid latex	2,563,366	303,518	17,011,912	2,073,947
Jelutong or pontianak	869,278	62,736	5,884,123	417,725
Balata	109,249	15,758	955,827	135,715
Gutta percha	429,798	52,671	2,734,726	390,313
Guayule	116,000	9,800	458,800	38,766
Scrap and reclaimed, etc.	759,728	11,532	4,129,527	49,563
Totals	110,097,529	$12,122,592	657,272,560	$74,559,455
Chicle, crude *Free*	1,122,926	$216,219	3,731,448	$808,409
MANUFACTURED—*Dutiable*				
Rubber soled footwear with fabric uppers *pairs*	69,617	$21,310	532,442	$140,807
Rubber toys	76,726	10,481	784,416	98,475
Druggists' sundries, n. e. s.	.....	4,926	.....	56,750
Combs, hard rubber *number*	78,668	4,313	406,142	22,796
Golf balls *number*	102,789	17,463	396,945	69,648
Tennis and other rubber balls *number*	123,436	6,526	2,668,435	127,199
Tires *number*	13,858	56,187	27,988	66,907
Other rubber manufactures	.....	30,868	.....	256,326
Totals	.....	$152,074	.....	$838,908

Exports of Foreign Merchandise

RUBBER AND MANUFACTURES				
Crude rubber	1,095,798	$132,173	17,006,518	$2,019,121
Balata	4,886	911	122,188	31,470
Gutta percha, rubber substitutes, and scrap	2,522	246	30,962	5,126
Rubber manufactures	.....	327	.....	11,772
Totals	.....	$133,657	.....	$2,067,489

Exports of Domestic Merchandise

RUBBER AND MANUFACTURES				
Reclaimed	859,623	$42,462	6,501,740	$321,887
Scrap	4,378,428	94,956	32,433,912	613,359
Rubberized automobile cloth, *sq. yd.*	47,598	25,415	318,707	166,677
Other rubberized piece goods and hospital sheeting *sq. yd.*	104,660	40,380	637,807	263,931
Footwear				
Boots *pairs*	3,307	7,925	52,575	114,676
Shoes *pairs*	19,848	9,922	116,287	57,764
Canvas shoes with rubber soles *pairs*	20,425	13,075	377,681	181,861
Soles *doz. prs.*	1,469	3,123	15,766	26,484
Heels *doz. prs.*	27,173	16,665	247,902	141,721
Soling and top lift sheets	11,467	2,622	115,685	21,242
Water bottles and fountain syringes *number*	18,900	6,044	105,057	37,267
Gloves *doz. prs.*	4,084	7,558	33,028	69,798
Other druggists' sundries	.....	32,739	.....	212,462
Balloons *gross*	11,338	11,260	139,350	123,474
Toys and balls	.....	7,267	.....	32,792
Bathing caps *doz.*	4,421	6,846	39,522	71,413
Bands	14,121	4,652	123,829	42,766
Erasers	25,312	14,868	193,862	109,613
Hard rubber goods				
Electrical goods	145,098	14,863	1,006,130	96,438
Other goods	.....	21,012	.....	115,118
Tires				
Truck and bus casings, *number*	12,680	233,518	112,036	2,004,654
Other automobile casings, *number*	65,329	600,307	434,062	3,748,071
Tubes, auto *number*	55,319	76,358	374,802	499,843
Other casings and tubes, *number*	2,424	12,653	23,643	88,353
Solid tires for automobiles and motor trucks *number*	422	12,790	3,167	89,772
Other solid tires	97,321	13,659	651,362	91,158
Tire sundries and repair materials	.....	30,623	.....	223,134
Rubber and friction tape	57,151	15,006	331,678	87,630
Belting	181,246	91,541	1,438,064	711,570
Hose	344,642	96,495	2,527,776	741,942
Packing	88,981	37,701	836,998	288,987
Thread	80,698	48,175	663,652	403,030
Other rubber manufactures	.....	99,948	.....	962,715
Totals	.....	$1,752,428	.....	$12,761,602

Foreign Trade Information

For further information concerning the inquiries listed below address United States Department of Commerce, Bureau of Foreign and Domestic Commerce, Room 734, Custom House, New York, N. Y.

No.	COMMODITY	CITY AND COUNTRY
†9,454	Rubber balls and toy balloons	Cairo, Egypt
†9,457	Rubber chemicals	Antwerp, Belgium
*9,473	Rubber boots, canvas top shoes, and galoshes	Athens, Greece
†9,498	Surgical goods	Jaffa, Palestine
*9,508	Typewriter key pads	Helsingfors, Finland
‡9,537	Sporting goods including tennis balls	Brussels, Belgium

*Purchase. †Agency. ‡Purchase and agency.

Rubber Questionnaire

Second Quarter, 1935*

	Long Tons			
RECLAIMED RUBBER	Inventory at End of Quarter	Production	Shipments	Consumption
Reclaimers solely (5)	3,946	12,483	11,992	.....
Manufacturers who also reclaim (21)	6,361	16,745	6,721	10,414
Other manufacturers (119)	4,504	.....	.....	12,883
Totals	14,811	29,228	18,713	23,297

	Long Tons		
SCRAP RUBBER	Inventory	Consumption	Due on Contracts
Reclaimers solely (5)	36,696	15,169	2,955
Manufacturers who also reclaim (18)	76,628	17,419	7,199
Other manufacturers (20)	222	.....	.....
Totals	113,546	32,588	10,154

Tons of Rubber Consumed in Rubber Products and Total Sales Value of Shipments

PRODUCTS	Rubber Consumed Long Tons	Total Sales Value of Shipments of Manufactured Rubber Products
Tires and Tire Sundries		
All types pneumatic casings (except bicycle, airplane)	74,293	$85,017,000
All types pneumatic tubes (except bicycle, airplane)	10,918	10,568,000
Bicycle tires, including juvenile pneumatics (single tubes, casings, and tubes)	464	690,000
Airplane tires and tubes	36	118,000
Solid and cushion tires for highway transportation	311	388,000
All other solid and cushion tires	114	309,000
Tire sundries and repair materials	2,773	3,447,000
Totals	88,909	$100,537,000
Other Rubber Products		
Mechanical rubber goods	10,341	$28,772,000
Boots and shoes	4,115	7,494,000
Insulated wire and cable compounds	1,121	†
Druggists' sundries, medical and surgical rubber goods	733	1,874,000
Stationers' rubber goods	419	521,000
Bathing apparel	281	1,138,000
Miscellaneous rubber sundries	879	1,881,000
Rubber clothing	257	545,000
Automobile fabrics	142	476,000
Other rubberized fabrics	901	2,432,000
Hard rubber goods	460	1,877,000
Heels and soles	2,930	4,239,000
Rubber flooring	202	425,000
Sponge rubber	803	891,000
Sporting goods, toys, and novelties	623	2,005,000
Totals	24,207	$54,570,000
Grand totals—all products	113,116	$155,107,000

Inventory of Rubber in the United States and Afloat

	Long Tons	
	Crude Rubber on Hand	Crude Rubber Afloat
Manufacturers	204,274	13,387
Importers and dealers	69,972	42,265
Totals	274,246	55,652

*Number of rubber manufacturers that reported data was 239; crude rubber importers and dealers, 43; reclaimers (solely), 5; total daily average number of employes on basis of third week of April was 146,792.

It is estimated that the reported grand total crude rubber consumption is 92%; grand total sales value, 95%; the grand total crude rubber inventory, 85.6%; afloat figures unavailable; the reclaimed rubber production, 100%; reclaimed consumption, 80%; and reclaimed inventory, 82.6% of the total of the entire industry.

†Due to the difficulty of securing representative sales figures this item has been discontinued.

Compiled from statistics supplied by The Rubber Manufacturers Association, Inc.

London Stocks, August, 1935

			Stocks, August 31		
LONDON	Landed Tons	Delivered Tons	1935 Tons	1934 Tons	1933 Tons
Plantation	6,777	†4,447	101,519	48,870	39,434
Other grades	35	17	55	83	46
LIVERPOOL					
Plantation	‡*2,614	*1,945	*75,584	*56,246	*57,143
Total tons, London and Liverpool	9,426	6,409	177,158	105,199	96,623

*Official returns from the recognized public warehouses.
†Includes 67 tons transferred to Liverpool.
‡Includes 67 tons transferred from London: also 202 tons in transit at the end of July.